

Yu. M. Shvyrkov

# CENTRALISED PLANNING OF THE ECONOMY

This book analyses theoretical research in the sphere of planning and programming and describes actual practices as well as specific plans and programmes for economic development under different social conditions. By comparing the planning and programming methods used, the essence of development plans and programmes, and the results of their implementation, the author shows the advantages of the socialist economic planning principles.

The book will be of interest to planners, managers on the macro-level, a wide range of economists, lecturers and post-graduates in the economic faculties of colleges and universities.

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CENTRALISED PLANNING

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PLANNING  
OF  
THE ECONOMY**



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## INTRODUCTION

Ever since World War II, the idea of nation-wide economic planning has been widespread in various countries with different social conditions. The active participation by the state in contemporary economic affairs raises the question of the class content, targets, possibilities and influence on socio-economic development of national economic planning in the socialist countries and state programming in the capitalist and newly-free ones. A major theoretical and practical task in the efforts aimed at a socialist restructuring of society is to formulate the Marxist stand with respect to state programming in the capitalist countries and economic planning in the developing ones.

The appearance and development of state economic planning were engendered by the deep-going socio-economic changes taking place in the world. The planned management of the country's economy is a fundamentally new phenomenon that is inseparably linked with the emergence and consolidation of the socialist system. The planning of economic development, together with the latest discoveries in the natural sciences and the results of the contemporary scientific and technological revolution, is among the most outstanding scientific and practical achievements of today. The current level of productive forces and the social character of production require a balanced development of the economy. In contrast to other forms of economic development, plan-

ning is geared to a consciously maintained balance of all components in pursuit of specific goals. Under socialism, with its planned economy, the opportunity and need arise for scientific management of the economy, which ensures an unprecedented acceleration of socio-economic development.

During the years that the people of the Soviet Union have been engaged in peaceful creative labour, the country has advanced from being a backward agricultural one to a highly developed industrial power. The national income rose 128-fold between 1922 and 1976. All this was a consequence of the socialist transformation that removed the obstacles to planned, balanced development of social production in the interests of the entire people, especially capitalist ownership of the means of production in whatever form—private capitalist, joint-stock or bourgeois state property. The planned management of the economy on the basis of the application of objective economic laws has become a major function of the socialist state. The nationalisation of large-scale industrial enterprises, means of communication and banks initiated the socialist socialisation of production and led to the emergence and development of a new type of economy.

During the socialist transformation and rapid development of socialist society's productive forces, state planning grew from being a partial measure into an all-embracing, directive one. The forms and methods of planned management developed.

Article 16 of the Constitution of the USSR says: "The economy is managed on the basis of state plans for economic and social development, with due account of the sectoral and territorial principles, and by combining centralised direction with the managerial independence and initiative of individual and amalgamated enterprises and other organisations." Now socialist planning can be described as comprehensive and deliberately geared to attaining several goals at one time. Its methods are developing towards the intensive and all-round use of all available resources, which does not mean that the only purpose of planning is to ensure the best possible utilisation of resources. The central thrust of planning activities is further shifting towards creating the necessary conditions for the all-round development of all members of socialist society, so socialist planning today is, not only in its final goals, but also in its actual content, in-

creasingly social, rather than just applicable to production or resources, as bourgeois ideologists try to make out.

The development of planning is not as simple or as clear as might appear at first. Economics and planning have to deal with complex problems: how to make the plan embrace the increasingly intricate interconnections in production, how to take account of the interaction between the interests of the individual and those of work collectives and society as a whole; how best and most accurately to assess the effectiveness of the decisions taken from the point of view of development prospects; how to make the set of plan indicators self-regulating. These and other problems involved in the development of planning testify not to any "difficulties" encountered by socialism, but to the real opportunity to manage society's development in a deliberate and conscious way in the interests of the people. The improvement of socialist planning is an essential component of the development of socialist society.

Attempts to apply planning without implementing socialist transformation have never been considered by Marxists as an attribute of socialism. The founders of Marxism-Leninism have always seen centralised economic planning as something inherent in socialism alone. All other forms of "planning" have been appraised as surrogates of genuine planning. Lenin wrote: "The trusts, of course, never provided, do not now provide, and cannot provide complete planning. But however much they do plan, however much the capitalist magnates calculate in advance the volume of production on a national and even on an international scale, and however much they systematically regulate it, we still remain under *capitalism*—at its new stage, it is true, but still capitalism, without a doubt."<sup>1</sup>

Marxists consider the balanced development of production as essential, but this can only be achieved by state planning, given public ownership of the means of production. Attempts by the bourgeois state at economic programming are no more than a recognition of the need for such a balance. It is not possible, however, to organise really all-embracing planning on the scale of the whole of society without first eliminating private enterprise. The post-war period has seen

<sup>1</sup> V. I. Lenin, "The State and Revolution", *Collected Works*, Vol. 25, p. 448.



increasing intervention by the bourgeois state in the capitalist reproduction process and attempts to elaborate and implement programmes for national economic development. The reason for this is the social nature of modern production: the scale and concentration of production have reached gigantic proportions and the entire economic machinery has become much more complex. The law governing capitalism's development, which Lenin formulated over sixty years ago, is still fully operative. Lenin wrote that capitalism in its imperialist stage leads right up to the most all-round socialisation of production, draws, so to say, the capitalists, against their will and conscious desire, into a new sort of social order, transitional to complete socialisation.

State-monopoly capitalism and its control mechanism demonstrate the extent to which it can adapt the capitalist production machinery to the new economic conditions. Highly developed production objectively demands a balance. Given public ownership, the achievement of such a balance becomes the decisive factor behind the further development of productive forces.

In contrast to socialism, state programming in the capitalist countries is geared to maintaining the system of exploitation and oppression. Within the capitalist system, the components and functions of the superstructure are adapted to promoting the development of productive forces as far as they assist in maintaining the private ownership of the means of production. The significant national resources controlled by the bourgeois state provide a real basis for an active state policy with respect to the economy.<sup>1</sup> The medium-term national economic programmes in France, Italy, and Britain, the annual ones in the Netherlands and the Scandinavian countries, and the long-term carry-over programmes in Japan are well known. Attempts to elaborate joint economic development programmes for economic groupings and blocs of several capitalist states are nothing new. Virtually every country in the capitalist world applies some form of programming in the practice of state regulation. The fact that programming has been practised in the majority of capitalist countries for a long time now indicates that pro-

<sup>1</sup> "Today, in fulfilling these functions, the state concentrates in its own hands roughly 35-40 per cent of the national income, and this share comes under central and local budgets" (*Mirovaya ekonomika i mezhdunarodnye otnosheniya*, No. 3, 1978, p. 150).

gramming is becoming a constantly operating institution of contemporary capitalism, a factor of no minor importance in the development of the capitalist economy, exerting a substantial impact on capitalist reproduction and on all aspects of political and social affairs in the capitalist countries.

The evolution of traditional forms and methods of state intervention in the economy, given the domination of private property, has led to the formation of economic programming suited to the nature of capitalist production. The existing set of measures for indirectly controlling economic development has come to be called "indicative planning" in the capitalist countries, as the antithesis of centralised directive planning in the socialist countries. The recommendatory nature of indicative planning is determined by the restrictions imposed by private capitalist property and the competitive mechanism in the capitalist economy. Even so, state programming is expected to exert a more active impact on capitalist reproduction than traditional control methods do. It affects not only the financial sphere, but also the production and accumulation processes.

Economic programming in the capitalist countries is conditioned by the high development level of productive forces, the all-round merging of the state and monopoly corporations, the impact of economic competition between the socialist and capitalist systems, which compels the capitalist countries to aim for stable and high economic growth rates.

Economic planning in the developing countries is dictated by other factors: the need to overcome their backwardness and attain economic independence from the imperialist countries. The successes of the socialist countries and the unattractive prospect for the developing countries of having to go through all the same stages as the capitalist countries of Europe and North America did, force them to resort to planned economic management. In the developing countries, the emergence and development of state planning and management are directly linked with shedding colonial shackles and attaining independence. The last twenty years have seen many and increasing attempts by these countries to exert a planning influence on the course of socio-economic development. State planning and management are considered there as the most effective way to speed up economic progress and implement social transformations.

State planning and management are practised in some form

or another in the majority of developing countries today. Their particular role and distinguishing features in these countries are, as a rule, connected with the special functions of the state, with the fact that the key social problems can only be solved by systematic state-organised economic activities; that the state not only influences overall development, but also acts as the connecting link in the multistructured economy; that state intervention and a purpose-oriented state policy are the only national factors capable of initiating the fundamental restructuring of a non-integrated economy.

This shows that state planning and management in the developing countries cannot be considered as an attempt to represent the desired state of affairs as the actual one. The state does, of course, indulge in planning here, though this is an extremely complex and contradictory phenomenon, as complex and contradictory as the developing countries' choice of a future development course. The direction in which the material and social conditions for the functioning of state planning and management will develop depends on the choice of a socialist or a capitalist development course. The last two decades have shown that only non-capitalist development is capable of providing the material and social conditions for successful application of state planning on a national scale.

In contrast to the Marxist understanding of the role and place of economic planning in countries with different social conditions, bourgeois ideologists put forward the thesis of neutrality of planning which can be applied under any social conditions. The apologists of capitalism manipulate the concept of "planning" activities by the state to advertise the convergence theory. On the basis of the increasing state activities in regulating the economies of the capitalist and developing countries, bourgeois economists now claim that the capitalist world is advancing towards some form of planned economy. Indeed, a genuine revolution has taken place in Western theoreticians' way of thinking. Planning from a single centre is no longer viewed as the enemy, but as the ally of the market economy. State organisation and private competition, i.e., the plan and the market, are mutually complementary, according to French economists. They are supposedly not alternatives, but fulfil different functions: the market ensures a short-term equilibrium through the price

mechanism, while the purpose of the plan is to find long-term solutions. Bourgeois economists believe that decision-making is essential for planning, and that the latter should not be considered as something conflicting with the market economy. The authors of the convergence theory have announced the socialisation of capitalism through state planning and programming. The term "state planning" no longer frightens big businessmen.

Gunnar Myrdal wrote on the problem of development in the countries of Southern Asia that nowhere have "socialism and the planned enlargement of the public sector as yet gone against the interests of big business or any other group above the masses".<sup>1</sup> This puts over the idea that certain forms of planning do not conflict with private enterprise.

The apologists of capitalism try to present state "planning" activities as evidence of an improvement in capitalism, and in the developing countries as a way out of the stagnation through integration with the industrialised capitalist countries. The ideologists of monopoly capitalism see state planning as the key to the resources of the former colonies. This idea has been taken up by the governments of many capitalist countries whose imperialist quarters have gone over from refuting outright the advantages of planned economic development to using planning in the developing countries in their own interests. They use consultative aid to these countries to collect all sorts of information, assess the possibilities for the profitable relocation of their capitals, to subordinate state investment to the interests of the private sector, as well as to "plan" the granting of credit, pushing the newly-emerged countries into setting up economic structures ensuring dependence on former and new metropolitan countries, and so on.

An increasingly common practice in recent times is the granting of aid to the developing countries on the condition that the representatives of the capitalist countries have access to all types of economic and planning information. The planning and managerial services of the developing countries are being swamped by all sorts of experts who have undergone a special training; mass issues of suitable "economic" and "planning" literature are brought

<sup>1</sup> Gunnar Myrdal, *Asian Drama. An Inquiry into the Poverty of Nations*, Vol. II, Pantheon, New York, 1968, p. 737.



out. In recent years, the ruling circles of the imperialist powers have been transferring the accent in "aid" to the developing countries to technical assistance in training personnel. This is no chance development, but a result of a far-reaching policy.

State planning has thus become the object of a fierce ideological and economic struggle between progressive and reactionary forces, both inside and outside the developing countries.

The need for comprehensive research into state economic planning and programming in countries with different social conditions is self-evident. An essential precondition for such research is recognition of the fact that the essence, forms and methods of state economic planning and programming reflect all the most important features of the predominant production relations. The advantages of socialist planning, which ensures a genuine flourishing of the economy in the interests of the people, are quite distinct.

Marxist economists, in their all-round analysis of new phenomena in the state regulation of the capitalist economy, justify the need for a democratic alternative to state capitalist programming, formulate a number of new propositions for the economic programmes of the workers' parties engaged in the class struggle under capitalism and during the transition to socialism. They reveal the realistic prospects for the economic competition between socialism and capitalism in specific aspects of the state activities in managing the national economy.

An assessment of the development trends in state economic planning in the newly-emerged countries is important for Marxists because of the attempts that are being made to apply elements of centralised regulation to the utilisation of national resources in order to attain economic independence. The development of national planning towards socialist planning or capitalist programming constitutes one of the chief characteristics of the development of the multi-structured economies of the developing countries. A country's social orientation in both planning and in general depends on whose interests are served by the resources the state controls.

The present research will reveal the difference between the theoretical concepts underlying the methods of socialist planning, capitalist programming and state planning in

the newly-emerged countries, determine the specific methods connected with the very nature of socialist planning or capitalist programming, establish the fundamental limits to any possible interpenetration of various methods conditioned by socialist or capitalist production relations. At the same time, the research will help in defining the spheres of capitalist programming where helpful methods might be found for use in socialist planning, too.

## THE BASIC DIFFERENCES BETWEEN SOCIALIST PLANNING AND CAPITALIST PROGRAMMING

Centralised economic planning first arose within the socialist countries, where it is being successfully developed and improved; individual elements of state economic planning are also applied in developing countries, while many capitalist states try to implement national programmes for development. The need to plan economic development is now universally recognised and reflects the necessity of managing this development on a scientific basis. Economic planning creates major opportunities for the conscious and rational use of resources in individual countries and regions. For the planned, balanced development of the economy, however, for taking advantage of overall national economic planning, certain real conditions are required.

The term "planning" is now a popular one, used widely in various situations. Recent decades have seen the idea of planning national economic development gaining currency throughout the world, in countries with different socio-economic systems. This means that the current level of development of productive forces and the social nature of production require balanced and purposeful development of the economy. At the same time, the social conditions in different countries favour the effective application of macro-economic planning methods to varying degrees. This gives rise to complex theoretical and practical problems, which



are elaborated by economists with the most diverse political views, reflecting the interests of various classes and social strata. The governments of many countries are making considerable efforts to apply economic development planning in practice. In recent years, there has been a substantial step-up in the work of international organisations in this sphere.

### National Economic Planning as an Element of the Socialist Economy

The principle of the planned development of the economy is dictated by the objective conditions of society today. Large-scale machine industry and the deep division of labour giving rise to thousands of interconnections, resolutely demand a balanced development and planned control of production.

The socialist transformations in the USSR broke down the barriers to planned, balanced economic development, the chief one being private ownership of the means of production. The emergence of a socialist society made it possible for the first time ever to put forward national goals and involve all the people into pursuing them.

The goal of economic development in the socialist countries is maximum satisfaction of the growing needs of society as a whole and of its individual citizens. Various intermediary tasks arise in the pursuit of this overall goal, their nature being determined by the level of development of productive forces at each given stage and by the objective economic conditions. Even so, all these targets must serve the attainment of the main one—the rise in the people's standard of living and the development of society's productive forces.

Article 15 of the Soviet Constitution states that "the supreme goal of social production under socialism is the fullest possible satisfaction of the people's growing material, and cultural and intellectual requirements".

The elaboration of the principles of economic planning that a number of countries use today in various forms began in a country that was then way behind the developed capitalist states. On the eve of World War I, Russia was producing only an eighth of the USA's volume of indus-

trial output at the time, and only a thirteenth or fourteenth in per capita terms. Although industry in Russia was running fifth in the world in terms of output, it was still backward and badly equipped. The economy's machinery and equipment needs were met mainly through imports from the developed capitalist countries.

The imperialist World War I, and the foreign military intervention and Civil War following the Revolution led to the collapse and destruction of a substantial part of the country's productive forces, throwing the Russian economy far back. After the Great October Socialist Revolution in 1917, until the first long-term development plan was drawn up in 1920, Soviet Russia was producing less than 14 per cent of the country's 1913 volume of industrial output. The national pig iron output was only 116,000 tonnes against 4.2 million tonnes in 1913 and the respective figures for iron-ore mining were 164,000 tonnes and 9.2 million tonnes. The output of coal mining dropped to a third, the extraction of oil to two-fifths and the generation of electricity to just over a quarter. Agricultural production dropped by a third. The national income stood at about 23 dollars per capita (in 1958 prices).<sup>1</sup> The foreign intervention and the Civil War cost Soviet Russia a quarter of the prewar national wealth.

These figures show that the new state inherited an economic potential that was poorer than those of some of the larger developing countries today. For instance, the 1967-69 per capita national income was 270 dollars in Brazil, 72 dollars in India, and 67 dollars in Nigeria.<sup>2</sup>

Only extreme measures could bring the country out of its impoverished condition. All available resources had to be mobilised for restoring and then accelerating changes in the economic structure, and the effective utilisation of resources ensured. To these ends, the centralised planning and management system was set up and, as the economy developed, it embraced a growing quantity of economic resources and spheres.

In 1920, the world's first ever long-term economic plan was elaborated—the GOELRO plan for the electrification of Russia over a 10- to 15-year period. Since then, the planned

<sup>1</sup> Here and henceforth given in US dollars.

<sup>2</sup> The national incomes are calculated by the methods current in these countries.

management of the national economy has developed and improved. Planning in the USSR has been practised for over half a century. Now economic matters on the scale of the entire Soviet economy are decided and directed by the state national plan for economic and social development, which provides for the steady development of productive forces, an increase in the national wealth, and a strengthening of the country's defence potential. The state plans are major instruments for managing all sectors and spheres of the economy.

Now is the moment to consider the suitability of the concept of "planning" for describing national economic planning under socialism and its unsuitability for describing that under the capitalist system. It should be noted that we are here referring to overall national economic state planning, rather than the general concept of economic planning applied in any particular economic sphere. For instance, planning within a firm or corporation only exists as far as capitalism as a system does.

National economic planning under socialism may be seen to consist in the state's economic activities to ensure the optimal utilisation of all production facilities for the all-round satisfaction of people's requirements, and in the creation of suitable conditions for the further development of society and the individual. The form taken by these activities is the planned management of the economy. This means that the state, first, organises production *in the interests of society as a whole* and that, second, it is *precisely the state* that organises production, i.e., the state is the executive of management on the national economic level. It represents the people as owners of the means of production and, in this sense, as society's trustee it fulfils the functions of managing production and distributing resources. The combination of social goals with socialist public ownership makes it possible to apply the only form of management possible under these conditions—planned management. Essentially, this management consists in the purposeful, conscious and co-ordinating activities of economic bodies, ensuring that the activities of each socialist enterprise meet the national interests.

Under socialism, state activities geared to achieving balanced and efficient development are a reflection and result of the socialisation of production. Highly developed pro-

duction's demand that a balance be achieved thus becomes an urgent necessity, the deciding factor behind the further development of productive forces. It is this sphere of economic analysis—the conditions for the further development of modern productive forces—in which it is possible to pinpoint the common origins of the two different types of state influence on the economy. These common origins cannot, however, give rise to just one sort of state influence on the development process under the two different modes of production—the capitalist and the socialist.

Whatever the scale and results of the bourgeois state's actions to overcome imbalances in development, they cannot erase the fundamental differences between socialist planning and capitalist programming. The former proceeds from the economic laws of the new social system and applies them to advantage: the basic economic law of socialism, the law of planned, balanced development of the economy, the law of distribution according to work done, and so on. As a result, socialist planning helps in building the new society.

Bourgeois programming, however, is practised in a society whose economy operates according to the laws of the capitalist mode of production. In contrast to socialist planning which rests on a mastery of the objective laws of economic development, bourgeois programming is subordinated to the spontaneous operation of the laws governing the capitalist economy. The main purpose of the bourgeois state's economic functions is to maintain the exploitative system, to foster private ownership of the means of production and create favourable conditions for the monopolies to cream off maximum profits, regardless of fluctuations in the economy. This all means that state programming can be regarded as a means for maintaining the existing course of social development. The reactionary essence of capitalist programming cannot be camouflaged even by the most attractively-painted programming forecasts of a future state of "prosperity". Some sixty years ago Lenin wrote that "planning does not make the worker less of a slave, but it enables the capitalist to make his profits 'according to plan'".<sup>1</sup>

<sup>1</sup> V. I. Lenin, "The Seventh (April) All-Russia Conference of the R.S.D.L.P.(B.)", *Collected Works*, Vol. 24, p. 306.



This class approach to the essence of state programming allows a clear dividing line to be drawn between the completely opposite goals and tasks of socialist planning and capitalist programming. Under socialism, the tasks of national economic planning reflect the people's interests and the laws governing socio-economic, scientific and technological progress. Under capitalism, state intervention in the economy through measures influencing technological progress helps to make the monopolies more competitive and to further enrich the propertied classes, and results in the people themselves having to bear the brunt of the problems involved in capitalist economic development. State capitalist programming, which expresses the interests of the monopolistic upper crust, is essentially antagonistic to those of the working people, though the apologists of capitalism try to paint it as a sign of social harmony. The creation of a machinery for state-monopoly control is yet another attempt to save capitalism, thus reflecting the real difficulties encountered by the system of market self-regulation.

The different purposes of socialist planning and capitalist programming are conditioned by the different spheres that come under planning: the socialist system, with public ownership of the means of production, and the capitalist one, with a predominance of private ownership of these means and the private nature of appropriation of material goods and services.

The fundamental differences in nature between socialist planning and capitalist programming, their totally opposite goals, and the different planning spheres also engender fundamental differences in the methods of state management employed. The combination of centralised directive planning of the national economy with the economic independence and initiative of socialist enterprises makes it possible to mobilise all the country's resources and the people's creative work to speed up socio-economic development. This creates an opportunity for organically combining the methods of centralised planning with the use of value levers within a single system for managing both the economy as a whole and its individual components. Under capitalism, state programming pursues the goal of adjusting the effect of the market mechanism, smoothing over its most destructive consequences. The intertwining

of state regulation with the economic mechanism takes the form of adapting state economic policy measures to the laws of capitalism. The market subordinates state programming and results in the application of economic policy methods suited to the nature of the capitalist economy. The development of state-monopoly control led to the formation of the only possible form of state "planning" of the capitalist economy, which is called indicative planning.

The non-obligatory nature of the programmes means that they are basically no more than economic forecasts prepared by state bodies. Economic forecasting is also practised in the socialist countries, but here this constitutes a preliminary stage in the elaboration of the long-term plan. A complex set of methods, including all contemporary econometric ones, have been developed and used for economic forecasting purposes. The socialist countries' experience indicates that forecasts can constitute an integral part of the plan only when they are the *point of departure* in planning development. The preparation of long- and medium-term forecasts cannot replace planning.

It should be stressed that the indicative, i.e., non-obligatory nature of capitalist programming is presented by bourgeois theoreticians as one of its advantages over socialist planning. Theoretical analysis of such claims and practical observations testify that the opposite is the case, that it constitutes a limitation on and source of contradictions and weakness in this "planning". By its very nature, the bourgeois state cannot control the process of production and distribution in conflict with its basic principle—that of promoting the self-expansion of capital and the extension of the sphere of capitalist exploitation.

Thus, only at first sight do the state national economic planning under socialism and state overall national programming under capitalism seem at all similar in that they both involve the state acting on the economy in the pursuit of certain global aims. Any more detailed consideration of the two shows that they differ in all the details making up this "overall" picture. There is a difference in the class nature of the state, and in the social purpose of its activities, in the principal distinguishing features (in the character of production relations) and the resulting differences in methods of implementation (see

next chapters). The overall result is the appearance of incompatible concepts of planning and programming, the divergence between which might be formulated briefly as a comparison of all-embracing directive socialist planning and indicative, partial capitalist programming.

The bourgeois state's actions to reduce the imbalance in the economy and promote development by means of economic programming create the illusion that modern capitalism is going through some transitional state from anarchy to "planning". Attempts to co-ordinate the activities of various economic sectors and different types of labour under the increasing division of labour, are often referred to as "planning", "state activities to achieve an economic balance", or "state co-ordination of development". Such facts and the terms used to define them give rise to claims that there is "planning" under capitalism, without Marxist assessments of the class content and limited nature of such "planning" being mentioned.

If we consider planning as an essential component of socialist production relations, as a fundamental category of the socialist system rather than a derivative one, the essence of state capitalist programming becomes much clearer. These bourgeois state activities can be regarded as an attempt to compensate for the destructive consequences of the market mechanism and to achieve a balance of the capitalist economy. In reality, they are based on the bourgeois state controlling considerable resources that allow it to indulge in such activities. It does not follow, however, that capitalism as a system of production relations thus demonstrates the possibility of a fully planned balance. The society of private property and, consequently, of conflicting goals cannot achieve an organic combination of "planning activities" by the state superstructure and the economic basis. The latter invariably modifies the superstructure's attempts in accordance with the laws of capitalist development. If bourgeois programming is viewed from the organisational and material angle, rather than from that of its socio-economic essence, the bourgeois state's activities are seen to be determined by the scale of social production, the extent of the division of social labour and the multiple interlinks in the social co-operation of production, i.e., the high level of development of productive forces.

Yet even the transfer of part of the national resources

to the jurisdiction of the bourgeois state does not change the capitalist character of productive forces.<sup>1</sup> Engels wrote that "state ownership of the productive forces is not the solution of the conflict, but concealed within it are the technical conditions that form the elements of that solution".<sup>2</sup> These productive forces no longer fit into the framework of capitalist production relations. One sign of a growing readiness for the transition to socialism is the state's organisational activities in elaborating and implementing development programmes. Such an organisational and material interpretation of the concept of capitalist programming is, of course, a limited one, since the functions of the bourgeois state reveal the class interests of the exploiting minority in capitalist society.

Thus, the bourgeois state's activities can be regarded as a manifestation of the basic relation in capitalist society—that of exploitation. Moreover, programming is used for collective exploitation under bourgeois state auspices.

All these points have been made in order to stress the importance of studying the category of the planned, balanced economy not only with respect to the development stage of socialism, but also to the suitability of this concept for any particular system of production relations, for the nature of the interconnections of this category and that of the level of development of productive forces.

It seems justified to say that, under socialism, "planning is a form of movement of the aggregate of production relations" and that "planned relations constitute part and parcel of production relations". In this lies the main possibility of attaining a balanced economy under socialism. In a society where the private form of assimilation of the product predominates, the antagonistic interests of property holders exclude the possibility of attaining a balance by means of conscious regulation of the economy. This does not, however, exclude attempts at such regulation, attempts engendered by the social character of pro-

<sup>1</sup> See: Frederick Engels, *Anti-Dühring*, Progress Publishers, Moscow, 1975, p. 330.

<sup>2</sup> Frederick Engels, "Socialism: Utopian and Scientific". In: Karl Marx and Frederick Engels, *Selected Works*, in three volumes, Vol. 3, Progress Publishers, Moscow, 1976, p. 145.



duction. Such regulation conflicts with the economic laws of capitalism, while, under socialism, it is an organic component of the economic system. This explains the transition from partial planning in the multistructured Soviet economy to all-embracing national economic planning under developed socialism. It also explains why capitalist "planning", restricted by the bounds of private property, is a weapon in the extremely fierce competition between property holders. "Where there are no common interests there can be no unity of purpose, much less of action."<sup>1</sup>

The identity of purpose and interests of the members of socialist society provides the basis for the main distinguishing feature of socialist planning—its genuinely democratic nature. It is this that determines the people's participation not only in implementing, but also in drawing up socialist national economic development plans. The organisational principles behind national economic planning, based on Lenin's idea of democratic centralism, guarantee that all the working people take an active part in compiling the plans for enterprises, industries, republics and the country as a whole.

In contrast to socialist planning, capitalist programming practice reveals attempts to conceal the class essence of the bourgeois state's economic policy behind a supposedly democratic facade. During booms, entrepreneurs agree to a limited "triangular partnership" among business, the state and the trade unions in preparing development programmes. When there are economic difficulties, however, the state bodies reveal overtly centralist, bureaucratic tendencies. Since the state's economic apparatus is a weapon in the hands of the bourgeoisie, under such conditions even the illusion of "representative democracy" disappears. Thus, during the preparation of the seventh French "five-year plan", which coincided with an economic crisis, the number of commissions engaged in the work at the final stage was cut to 17 against the fifty that had worked on the sixth such plan. There was a corresponding cut in the already small number of participants in the elaboration of the government's economic programme.

<sup>1</sup> Frederick Engels, "Revolution and Counter-Revolution in Germany". In: Karl Marx and Frederick Engels, *Selected Works*, in three volumes, Vol. 1, Moscow, 1976, p. 307.

Among the most outstanding features of socialist planning it should be noted that national economic planning constitutes the economic policy of the socialist state, addressed specifically to particular spheres and organisations. This planning has a clear party nature, in contrast to attempts by the bourgeois state and its apologists to put over capitalist programming as a non-class national economic policy or as one of class co-operation. A clearly defined class position on aspects of state economic management is ensured under socialism by the clear-cut theoretical basis of socialist planning. This is Marxist-Leninist economic teaching, the key element of which—the theory of reproduction—is the direct methodological basis of the theory of planning, allowing national economic development planners to proceed from a knowledge and correct application of objective economic laws.

An objective appraisal of all the conditions under which the socialist economy is developing allows commodity-money relations to be used rationally within the framework of planned economic management. Socialist management practice has shown convincingly that, under socialism, an organic combination can be achieved between centralised control of the national economy and the economic independence of enterprises.

Since state economic programming is geared not to transforming the foundations of the capitalist system, but, just the opposite, to maintaining and consolidating them in the form of private ownership of the means of production, and since state control is combined and merges with market control, it is eventually subordinated to it. "State-monopoly regulation, exercised in forms and on a scale which meet the interests of monopoly capital and are aimed at preserving its rule, is unable to control the spontaneous forces of the capitalist market," stress the documents of the International Meeting of Communist and Workers' Parties (1969).<sup>1</sup> The CPSU Central Committee report to the 25th Party Congress states that "capitalism did its utmost, so to speak, to keep in step with the times, to apply various methods of economic regulation. This made it possible to stimulate economic growth, but,

<sup>1</sup> *International Meeting of Communist and Workers' Parties, Moscow, 1969, Prague, 1969, p. 19.*

as the Communists foresaw, it could not remove the contradictions of capitalism."<sup>1</sup>

Socialist planning is not confined to exerting an indirect pressure on economic development and uses value levers within the overall system of direct (directive in nature) management of the national economy. It is more effective than capitalist programming simply because it is based on a mastery of the objective laws of economic development.

The USSR's success in the planned, balanced development of its economy has shown the decisive influence exerted by state planning on the rate of economic growth, the creation of an independent economy and the rise in the people's standard of living. The unfounded criticism of planned development by bourgeois economists and statesmen is being gradually replaced by increasing interest in planning, and attempts are being made to use certain elements of planning and programming under a variety of social conditions.

### **The Principles and System of Soviet National Economic Planning**

The Soviet fundamental organisational and methodological principles elaborated theoretically and tested in over fifty years of practice determine the essence of socialist planning. These principles include, above all, the following:

- a unity of politics and economics with a clear social orientation of the state's planning activities;
- the all-embracing nature and unity of planning resting on socialist ownership;
- the combination of overall national, group and individual interests arising from the class structure of a society consisting of working people without exploiters;
- democratic centralism as the general principle for organising planning, reflecting the unity of interests of society, groups and individuals and ensuring the broad participation of all the people in elaborating and implementing the national economic plans;

<sup>1</sup> *Documents and Resolutions. XXVth Congress of the CPSU*, Novosti Press Agency Publishing House, Moscow, 1976, p. 33.

—the obligatory nature of the plans worked out by society for all executive agencies, the plan assuming the force of law, as set out in the Constitution of the USSR.

The interconnection between the political and economic spheres during the elaboration and implementation of plans consists primarily in the way each plan is geared to strengthening and developing the socialist system, and the fulfilment of economic tasks is closely linked with that of political ones. Lenin wrote that, without a correct political approach, no class would maintain its dominion and, consequently, would not be able to fulfil its economic tasks.

The all-embracing and unified nature of planning ensures a balance of all sectors of the economy and makes it possible to use all the country's resources in the pursuit of an integral complex of economic and social targets, for co-ordinating the interests of society as a whole, of individual groups of workers and of individuals.

The implementation of democratic centralism in national economic planning implies a combination of centralised setting of the key plan targets and plan indicators with the granting of broad powers to Union republics, local Soviets of People's Deputies, staffs of enterprises and organisations in elaborating the plans, selecting effective methods for utilising manpower, finances, materials and natural resources. In practice, this is reflected in the way the plans are drawn up from "the top down" and vice versa. The dilemma characteristic of programming in the capitalist and developing countries, known as "project versus plan", does not exist for socialist planning. Lenin remarked that under socialism, the principle of "only from the bottom up" would mean anarchy.

The problems to be considered and resolved centrally include those affecting the interests of either society as a whole or substantial sections of the population. These are, for example, the choice of the chief trends and proportions in the development of the country's economy, the choice of scientific and technological policy, the rise in production efficiency, the ensurance of full employment of the able-bodied population, the rise in wages and other forms of consumption, and social security for the people. Also among the most important questions dealt with centrally is the planning of investment in developing eco-



conomic sectors. The distribution of investment between the various spheres and sectors of the national economy is connected with the need to accurately predict the demand for new productive and non-production facilities, and then decide the volume of the production of goods and services in all sectors.

Centralism makes it possible to co-ordinate the work of the thousands of enterprises producing the entire range of output manufactured in all the many regions of the enormous country, and to synchronise the entire production machinery, whereas democratism creates an opportunity to draw virtually all participants in the production process into the elaboration and implementation of the plans, to take account of their interests and find the most effective methods for fulfilling the agreed tasks in each enterprise and each job. Democratism in planning ensures that the working people have a conscientious attitude to their work, to what they are entrusted with doing in the interests of society, which helps to guarantee that the key plan tasks be fulfilled. The legal obligation to fulfil the plans is thus realistic. These general principles determine the nature of the specific demands made by socialist society on the organisation and methodology of planning, including, above all, those that determine the object and goals of planning:

- the scientific, technological and economic feasibility of the plan targets, full account being taken in them of the opportunities for scientific and technological progress;

- maximum economic efficiency of the tasks and decisions envisaged in the plan; overall savings of social labour;

- the co-ordination of long-term and short-term economic plans;

- the unity of sectoral and territorial planning;

- the evening out of economic development levels of individual regions of the country; the comprehensive development of the economy; specialisation in the division of labour.

It would be impossible to put all this into practice without creating and using interconnected systems of methods for elaborating national economic plans, applying a unified set of indicators, fully co-ordinating the set of plan indicators and accounting statistics. In turn, the ap-

plication of these methods for determining the indicators of the plan would be impossible without a system of quotas for the use (expenditure) of all the key resources. At the same time, such a system of quotas must vary constantly in order to take account of all the trends in scientific and technological progress and the introduction of progressive forms of production organisation and management.

All these principles underlie the system of national economic plans and state planning bodies. In the USSR, the system of national economic plans includes three types of plan that differ, first, in their time horizon and, second, in the scale and nature of their targets. These three types are: long-term plans (for ten or fifteen years); medium-term ones (five-year) and short-term plans (for a single year).

Long-term plans are programme documents defining and determining the overall (basic) trends in the social, economic, scientific and technological development of society. In addition to the chief development targets, the long-term plan contains a rational social, economic, scientific and technological policy, an estimation of the resources required for attaining the targets and ways of ensuring their efficient utilisation, the most important indicators of the structure and volume of production and consumption growth. In such a plan, the trends in socio-economic transformations are determined, as well as the improvement of production relations, structural, scientific and technological changes in production, the location of productive forces in the country, and the development of scientific research. The long-term plan also establishes the order of priority for solving the most important socio-economic, scientific and technological problems, and developing large-scale territorial-production complexes. This creates an opportunity for combining overall goals and tasks in the long-term plan with the specific tasks of each individual five-year plan within the framework of a long-term programme. One major specific of the long-term plan is the need to take account not only of scientific and technological advances that are already known, but also of new discoveries and achievements expected in science and technology.

From the methodological point of view, long-term plan-

ning presupposes the use of qualitative indicators describing the major trends in the development of the national economy, its individual sectors, regions of the country and the people's standard of living. Such plans are drawn up using multivariant calculations, resulting in the choice of the variant making it possible to fulfil all socio-economic tasks with a high degree of efficiency and rapidly. To this end, forecasts are made for the various spheres of the economy and society, and mathematical economic methods and models are applied widely.

The elaboration of the long-term plan involves three stages: the drafting of plan concepts, key trends, and a developed long-term plan. The long-term plan is drawn up for sectors of the national economy, Union republics, aggregated economic regions and major complexes of intersectoral problems.

Within the framework of the medium-term (five-year) plans, the tasks of the long-term plans are specified and so priorities are established. These plans determine the growth rate and structure of the whole economy, set the volume of production and investment for sectors and regions, the tasks involved in scientific research, specialisation and co-operation of production, specific characteristics of the location of new production units, and the tasks involved in increasing production efficiency. The plans also fix the targets, in temporal terms, for raising the standard of living, indicating the categories of income and the increase in individual components of the consumption of the population as a whole and of individual social groups. The possibilities for raising the people's well-being are determined primarily by the scale of production growth, and the size and spheres of investment, so carefully calculated indicators of the volume of output in the individual branches of material production constitute the foundations of the plan. The medium-term plan elaborates in detail the growth possibilities for the sectors ensuring an acceleration of scientific and technological progress, higher efficiency of all social production and, above all, engineering, the power industry, the chemical industry, and industries producing information and office equipment.

Since the five-year plan's purpose is to provide for the fulfilment of very specific tasks, while applying the principle of balanced development, a system of balance calcu-

lations is used for co-ordinating all the sections of the plan and its many indicators. This system is more detailed than the one used in long-term planning (see Chapter 2). The material balances (input-output tables) are compiled for a more detailed list of products. The investment programme is also considerably more detailed. A larger number of indicators are calculated for the medium-term plan (compared with the long-term one) not only for the entire five-year period, but also for each individual year. They also become obligatory directives for all economic units, including enterprises and organisations. The all-round co-ordination and balancing of the plan in the sectoral and territorial terms are essential conditions for fulfilling the plan targets in practice.

The five-year plan is drawn up in two stages: first, the elaboration of the key trends in national economic development, while the second stage results in the comprehensive five-year plan. The main trends constitute a model of the future five-year plan, in which its targets and the resources for attaining them are specified, together with the key problems to be tackled by the future plan. Proceeding from the main trends a draft five-year plan is drawn up and then discussed throughout the country. Discussion of the draft plan culminates at the next CPSU Congress, which makes decisions concerning the chief guidelines for the development of the national economy. On the basis of these a comprehensive five-year plan for the development of the national economy of the USSR is drawn up, with the targets allocated by year, ministry, department, Union republic and economic region.

Implementation of the key strategic socio-economic tasks is not only accomplished within the framework of the five-year plan. The search for all latent reserves and potentials not revealed within the five-year period is carried on under the annual plans which are instruments for day-to-day management of the entire national economy. These plans specify the yearly tasks of the five-year plans and, on the basis of this and detailed economic analysis, a scheme is worked out for the interconnections between enterprises for virtually all the key products, goods and services—the plans for material and technical supply. These are drawn up for specific time periods—a year, a quarter year, or a month. They are elaborated and implemented



on different levels of economic management, right down to the individual enterprise.

In the annual national economic development plans, the targets for sectors with respect to the volume of marketed output, production of the chief items in physical units and retail turnover are set for three-month periods, and the wage fund for six months. They also include the tasks involved in the commissioning of production facilities and fixed assets, the mass production of new types of industrial output, the introduction of computers into the economy, as well as advanced production processes, mechanisation and automation of these processes. The plans for ministries contain a number of major target indicators, broken down not only into three-month periods, but also for individual months. Most of the targets for production associations and enterprises are set by the month.

In 1979, the Central Committee of the CPSU and the USSR Council of Ministers adopted a resolution "On Improving Planning and Enhancing the Effect of the Economic Mechanism on Raising the Efficiency of Production and the Quality of Work", which defines ways to develop planning in the near future. The central idea of this resolution is a further improvement in long- and medium-term planning.

The current scale and conditions of economic development place new demands on the structure and technical level of production, and on the use of productive capacities and material resources. The key problems at present facing the Soviet economy include savings on fuel and energy resources, ferrous and non-ferrous metals, a cut in the capital and labour intensity of production and capital construction.

These problems involved in the development of the economy can be solved, given a clear and detailed assessment of the development prospects. In the course of five to ten years, changes can be made in the economy and scientific achievements introduced into production on a substantial scale. This is why five-year plans are becoming the main form of planning for the entire national economy and for the activities of each individual enterprise. The following procedure has been established for improving the perspective planning of economic and social development.

1. The USSR Academy of Sciences, the State Committee of the USSR on Science and Technology and the State Committee on Construction draw up a twenty-year comprehensive programme for scientific and technological progress that is broken down into five-year periods, and this is presented to the USSR Council of Ministers and USSR Gosplan (State Planning Committee) no later than two years before the beginning of the next five-year period. Every five years, the necessary adjustments are made to the comprehensive programme and it is extended for another five years ahead.

2. USSR Gosplan, together with ministries and departments of the USSR and the Councils of Ministers of the Union republics, elaborates a draft of the main guidelines for economic and social development in the USSR for ten years (by five-year period) on the basis of the long-term socio-economic targets and the comprehensive programme for scientific and technological progress. For the first five-year period, the key indicators are broken down for individual years, while for the second the main ones are set for the final year of the period (for the entire five-year period with respect to capital investment). Every five years, USSR Gosplan introduces the necessary amendments into the main guidelines and extends them for another five-year period. The draft guidelines consider various possible solutions to major economic and social problems. USSR Gosplan presents this draft to the USSR Council of Ministers, usually eighteen months before the end of the current five-year period.

3. In accordance with the draft main guidelines for the economic and social development of the USSR, USSR Gosplan works out control figures for the key indicators and economic rates for the coming five-year period and distributes them by the year, then conveys them to the ministries and departments of the USSR and Councils of Ministers of the Union republics a year before the beginning of the relevant five-year period.

The ministries and departments of the USSR and Councils of Ministers of the Union republics pass on the control figures to associations, enterprises and organisations within a month after receiving them from USSR Gosplan.

The associations, enterprises and organisations take the control figures as their guidelines in working out draft five-

year plans for economic and social development (with the targets broken down by individual years). Together with sales organisations, they carry out preliminary work with consumers and suppliers to decide the range (assortment) of output for the conclusion of economic agreements. The ministries and departments of the USSR and Councils of Ministers of the Union republics use the control figures of draft five-year plans drawn up by associations, enterprises and organisations as the basis for determining draft five-year plans (with an annual breakdown) for sectors and individual Union republics, and present these to USSR Gosplan.

Considering these drafts, USSR Gosplan draws up a draft state plan for the economic and social development of the USSR for the five-year period that is balanced for all indicators and broken down into annual targets. This is then presented to the USSR Council of Ministers no later than five months before the start of the next five-year period. At every stage in the planning, the desires and instructions of electors must be taken into account.

In order to enhance the role of the five-year plan as the main form for planning the economic and social development of the USSR and the organisational principles governing economic activities, it is established that, within the state five-year plan for the economic and social development of the USSR for each year of the five-year period;

- balances of material and labour resources be drawn up, of productive capacity, finances and the money incomes and expenditures of the population;

- according to the established rates, material and financial reserves be envisaged for the needs of production, capital construction and scientific research work, and reserves of productive capacity when required;

- economic rates be confirmed, including for the wage fund and the economic incentive fund.

The five-year plans must be drawn up on the basis of a set of technical and economic norms and rates for types of work, expenditure of labour, raw and other materials, fuel and energy resources, as well as rates for the use of productive capacity and specific investment. During the five-year period, stable wholesale prices must be maintained in industry, and also estimated prices in capital construction and freight transport tariffs.

Assessment of five-year plan fulfilment is carried out at all management levels by calculating the progressive total results of each year of the five-year period, while for annual plans the figures for the beginning and the end of the year are taken.

Annual plans for the economic and social development of the USSR are drawn up on the basis of the targets and economic rates set in the five-year plan for the given year, considering the required specification of these targets, the introduction of the latest scientific and technological achievements, and the carrying out of economic and organisational measures to ensure fulfilment of the five-year plan.

The elaboration of the annual plan involves three stages. At the first stage, from analysis of the fulfilment of previous and current annual plans, USSR Gosplan (State Planning Committee) makes recommendations for specifying the indicators of the five-year plan for the plan year and sends these to ministries and the Councils of Ministers of the Union republics. These government bodies, in turn, introduce their own amendments to the draft and hand it on for consideration at enterprise level. Enterprises determine the possibilities for fulfilling the drafts and make suggestions of their own.

In practice, the compilation of the annual plan begins from below, from the production association (enterprise) and organisation. Assessment of the results of economic activities, socialist emulation and the use of internal reserves provides the basis for production associations (enterprises) and organisations to draw up plans the targets of which outstrip those set for the given year in the five-year plan. Plans adopted on the initiative of production associations (enterprises) and organisations and co-ordinated with the material resources available are included in the annual plan. Annual plans give the range (assortment) of output produced according to consumers' orders under signed agreements. At the second stage, all the proposals made at lower levels are summarised and co-ordinated as the plan passes back upwards to the highest planning level. This work is carried out along two channels: that of branch ministries and departments, which elaborate the draft annual plans, distributing the targets by association (groups of interconnected enterprises) and enterprise; and that of territorial planning, where the planning bodies of the Union re-



publics complete the preparation of the draft plans for the development of sectors of the republican economy and make suggestions concerning the development of production in enterprises under the jurisdiction of all-Union ministries. In accordance with the five-year plan targets for the given year and taking into account the drafts indicated, USSR Gosplan prepares a draft state plan for the economic and social development of the USSR for the coming year and presents it to the USSR Council of Ministers at least four months before the beginning of the relevant year. After being considered by the USSR Council of Ministers and the Central Committee of the CPSU, this draft goes to the USSR Supreme Soviet, where it is first studied in the standing commissions, with ministries, departments and USSR Gosplan taking part, and then discussed by the Supreme Soviet. The amendments and additions introduced by deputies are taken into account by the Supreme Soviet, which then adopts the Law on the State Plan for the Development of the National Economy of the USSR.

Thus, planning in the USSR is an iterative process. It begins with the elaboration of drafts that are sent to all the lowest links in the economic system for detailed analysis, specification and improvement. Then all the assessments, proposals and recommendations reflecting the real possibilities within each specific production unit or enterprise are summarised. Virtually all the participants in production and management take part in this work. After all the revealed reserves have been co-ordinated and the ways defined for solving problems that have arisen, the draft plan is handed over for consideration to the highest Soviet legislative body—the Supreme Soviet. The Supreme Soviet confirms the plan, which then acquires force of law and reaches each executive body in this form.

The interconnection between all the various planning levels can be pictured as a pyramid, with the plans for industrial enterprises at the base. Sectoral planning combines the enterprise plans into plans for production associations (groups of enterprises) and then into those for the central sectoral organisations and ministries; territorial planning combines them into plans for territorial planning bodies and then into those for Union republics. Finally, the top of the pyramid is crowned by the state plan for the development of the national economy of the USSR.

All the plans are drawn up in both value and physical terms—the quantity of particular types of output slated for production during the plan period. The national economic plan constitutes a combination of the targets set for individual sectors of the economy in accordance with the goal facing the whole economy for the given plan period. These targets are grouped into separate sections. The structure of the state plan naturally depends on how developed the economy is, on the social and sectoral structure of material production, as well as the goals and targets of the plan. The sections connected with social problems occupy an important place in the state plan. Each such plan outlines certain prospects for the further rise in the people's incomes, the development of science, culture and the health service.

The plan contains sections determining the development of industry, agriculture, transport and communications, foreign trade, material and technical supply, retail turnover, individual economic regions, as well as the standard of living. The summary section of the plan is the master plan for the development of the national economy, which includes basic indicators for material production, labour and wages, finances, production costs and accumulation. The real socialisation of the division of labour and specialisation of industry and other economic sectors are reflected in the sectoral structure of the national economic plan.

The primary link in the system of sectoral planning is the enterprise plan, which determines the volume and time limits for production, the resources required for this, as well as rational economic links with other enterprises and organisations and, finally, financial indicators of economic performance.

At the middle level, the firm or association aggregates these plans and introduces a number of new ideas with respect to the co-ordination of the enterprises under its jurisdiction. These include the solution of problems involved in the specialisation and co-operation of production, technical policy, wages, prices, marketing output, and so on.

The plans of the central economic bodies (ministries and departments) envisage: the volumes of the key types of output of the given sector, the wage fund, the technological retooling of existing enterprises, specialisation, co-operation and combination of types of production; new construction, assuming that existing capacity and fixed assets

are put to their best use; and financial indicators. The sectoral plan outlines the development of the most efficient types of production in terms of technological processes, mechanisation and automation, the manufacture of prototypes of the most important machinery, mechanisms, equipment, materials, and commodities for the population. Considerable attention is focussed on elaborating and applying progressive expenditure rates for materials, fuel and manpower, on making rational use of productive capacity, raising labour productivity and reducing costs.

Sectoral planning does not cover many problems related to economic links, so it is combined with territorial planning by economic region. This is dictated, primarily, by the fact that each enterprise is connected with others, both within the given economic region and beyond. A regional (territorial) plan is also needed because some enterprises come under the jurisdiction of various levels of management (local and republican industry), i.e., are not subordinate to centralised management of economic sectors.

In the USSR, the co-ordination of all economic plans is carried out by an interconnected system of state planning bodies—the State Planning Committee of the USSR Council of Ministers (USSR Gosplan), the planning committees of the Union and autonomous republics, the planning commissions of the executive committees of area, district and regional Soviets of People's Deputies, departmental (planning and economic boards and divisions of ministries and departments) and production ones (planning divisions of enterprises and organisations).

The state planning bodies can be split into three levels: overall state, republican and local ones. Organisationally, they constitute a unified system, and their common task is to elaborate comprehensive plans for the development of the national economy (for the country, Union or autonomous republic, area, district or region, respectively) and to supervise their fulfilment.

The central national economic planning body is USSR Gosplan, which is subordinate to the Council of Ministers of the USSR and carries out overall state supervision of the actual planning process. USSR Gosplan not only draws up the national economic plans, it also checks the course of their implementation. In this, particular attention is focussed on commissioning production facilities on time and

putting new types of goods into production. USSR Gosplan makes recommendations for the Government on measures to prevent individual inconsistencies in the economy's development that might arise during the fulfilment of the plan.

Special functions in overall state planning are carried out by the State Committees of the USSR Council of Ministers—for building; for science and technology; for material and technical supply, their titles indicating their purpose.

Detailed planning of the development of economic sectors is the job of sectoral ministries and departments, in which the management of production, R and D are concentrated.

Territorial planning is carried out by economic bodies and local planning commissions. District (area), town, and regional planning commissions elaborate draft comprehensive plans for the development of the economy and culture and present them for the approval by the corresponding executive committees of their local Soviets of People's Deputies. After being approved by the Soviets, these plans are sent to the higher planning bodies.

The aspects of socialist planning outlined above ensured the success of the USSR's socio-economic development. This is evidenced, for example, by the results of the planned, balanced development of the Soviet economy over a long period. Since 1927, the end of the restoration period in the country, nine five-year plans have been adopted and fulfilled (1928-75). This period includes the years of World War II and of the time when the war-ravaged economy was being rebuilt.<sup>1</sup> During these five-year periods, the national income of the country has risen 57-fold, while the gross industrial product has gone up 113 times. In 1976, the per capita national income produced in the USSR reached 1,973 dollars at official exchange rates, and 2,423 dollars at comparable prices.

<sup>1</sup> The destruction and losses inflicted by World War II on the Soviet Union were immeasurably greater than those suffered by any other country. The overall loss is estimated at 1,890,000 million roubles in 1941 prices, which is over five times the 1940 Soviet national income. The destruction affected 1,710 towns and 31,850 industrial enterprises. The national income dropped by a third, agricultural output by two-thirds. The most terrible loss caused by the war was the death of more than 20 million Soviet people.



All social strata in the Soviet Union have benefited directly from this accelerated economic development.

The success in Soviet economic development has provided actual proof of the influence exerted by state planning on the rate of economic growth, the creation of an independent economy and the rise in the standard of living.

### **The Contradictory and Limited Nature of State Capitalist Programming**

Almost all industrialised capitalist countries now practise some sort of planning on a national scale. This new phenomenon in the capitalist states is known in Soviet literature as "state economic programming".

Until the 1929-33 Great Depression, capitalism had complete faith in the free enterprise principle, the "free" play and self-regulation of the market economy. The crisis undermined this faith, however, and state intervention in the economy began to increase, yet it was only after World War II that economic programming began to develop on a wide scale, and this process has gained momentum in the last twenty years. The economic development programmes of France, Italy, Japan, and the Scandinavian countries are cases in point.

The West European country with the most experience of state-monopoly programming is undoubtedly France, which has made six attempts to carry out national economic development programmes since 1947. In 1976, the seventh "five-year plan" was announced. Britain started to introduce programming at a much later date. The first macro-economic programme was the Labour Government's National Plan for the mid-60s. After the period covered by this programme had expired, a new government white paper entitled "Tasks for the Future" (1971-75) was published, setting out the Conservative Party's economic policy. In Italy, the two state programmes—the "Vanoni Plan" and the "Pieraccini Plan" (1966-70)—became widely known.

At the end of the 60s, the Federal Republic of Germany officially declared its transition to programming. This is particularly remarkable because West German bourgeois theoreticians for a long time rejected the attempts by French economists to control economic development and fa-

voured neo-liberal concepts of the "free market economy". The transition to programming in West Germany was initiated by the adoption of a four-year budgetary programme and *Zielprojektion* outlining the solutions to a number of long-term problems involved in the country's socio-economic development. Holland has developed its own specific approach to economic programming. Here, for many years, the Government has been compiling short-term programmes and co-ordinating them with the annual state budgets, as well as medium-term programmes—forecasts for a five-year period. Japanese economic development is also taking place along programming lines. Japan has, to date, elaborated seven medium-term "plans".

Economic programming can be regarded as a method for elaborating and pursuing, under modern capitalist conditions, an economic policy geared to determining the most efficient ways to promote the collective interests of the class of entrepreneurs or individual groups of them. The capitalist state tries to plan economic policy in the interests of the dominant classes. Programming of the national economy is a state-sponsored undertaking developed by government bodies.

Intrafirm planning arose much earlier than state programming of the national economy in the capitalist countries. This type of programming has existed for a long time, in fact, since the concentration of production began. The further concentration of production, which makes the main contradictions in the market economy even worse, engenders palliative measures to smooth them over. State economic programming thus constitutes a practical attempt to reach a "compromise" between the social character of production and private property.

In contrast to the socialist countries where national economic planning is a direct consequence of the public ownership of the overwhelming mass of means of production, programming in the capitalist ones is conditioned by a series of contradictory factors.

Soviet economists have already revealed the general and specific reasons and factors behind the emergence of economic programming and have shown the objective preconditions for its emergence and development. The key one is that modern productive forces require balanced development in order to function, which is engendered by the growth of

productive forces, given the enormous increase in the property belonging to monopoly amalgamations, the further concentration of production, and the constantly growing complexity of the entire economic machinery and its ties.

Currently, one of this process's chief distinguishing features is the tremendous increase in the number of mergers and the formation of supermonopolies, conglomerates influencing whole complexes of industries. The aim of forming conglomerates is to get rid of competitors or potential competitors in the production of new products. The result is that intrafirm planning and overall state programming draw closer and closer together, which enhances the role of the largest monopolies in the elaboration of imperialism's economic and political strategy.

All this has an all-round effect on the development of state economic programming. It is manifested, first, in the presence of a fairly large public sector that is managed by the state itself. Since the public sector is not, however, the dominant one, the market subordinates it to its own interests—those of private entrepreneurs and, consequently, subordinates state management of the nationalised sector of the economy to these interests, too. Second, it appears in the need for huge investment for technological progress, and this necessitates a high concentration of capital and co-ordination of individual research programmes. At present, the industrialised capitalist states are increasingly taking over the functions connected with technological progress: the financing of technical research, reconstruction, the development of certain new industries, the implementation of space research programmes, the financing of education, and investment of public funds in the infrastructure. This is one of the main trends in the activities of the capitalist state today. In connection with the development of military-industrial complexes in the major capitalist countries, the increase in arms production capacity is state-financed and based on government orders. This policy requires co-ordinated measures on a national scale, plus centralisation and regulation.

Many major features of modern imperialism are consequences of it having to adapt to the new conditions, to the struggle between the two systems. In this context, there can be no doubt that the transition to programming was, in a way, capitalism's response to the political and economic

challenge of socialism, an attempt to demonstrate the "common goals" of capitalist society's antagonistic classes. The very existence of the socialist countries, plus the growth in their economic might and the international prestige of the socialist system, exerted an impact on the emergence and development of capitalist programming. The successes of the entire socialist system in post-war years have led to an upsurge in demonstrations by the working people in the capitalist countries for democratic transformations and for restrictions on the arbitrary behaviour and power of monopoly capital. So capitalist programming must not be regarded as just a new form in which the class interests of entrepreneurs are, with respect to the conditions for internal development, being realised. The transition to programming was enforced by pressure from the people of several countries united into broad popular fronts.

In individual countries at various stages of economic development, state programmes have announced different long-term economic policy goals corresponding to the specific conditions. Until very recently, however, programming's chief goal was still to ensure high and stable economic growth rates in the capitalist countries and an overall increase in their production efficiency.

Under the economic competition and struggle between the two world systems, the problem of raising economic growth rates has become of prime importance in the capitalist countries. This is particularly emphasised by bourgeois theoreticians, some of whom even believe that the attainment of this goal through programming is virtually the only way for the capitalist countries to get out of the dead end in which they have been trapped by the growing influence of the world socialist system on the entire course of world development today. In the opinion of bourgeois economists, the West is threatened with defeat. The two systems seem to be waiting for the judgement of the whole world, which would decide which of the two systems could develop faster. French social-reformist theoreticians agree that the growth rate of industrial production is much lower in most capitalist countries than in the Soviet Union. Under contemporary conditions, the ruling quarters in France see high economic growth rates as a major means for rehabilitating capitalism as an economic system.

The problem of growth rates has assumed special sig-



nificance in the countries of Western Europe, where it has been exacerbated by the competition from the USA and Japan, and the vital need felt by some countries, particularly Britain, Italy, France, and Holland, for a restructuring of their economies, owing to the final collapse of their colonial empires. It is not surprising that the problems of economic growth rates and the modernisation of the economic structure have been put forward among the chief goals of these countries' economic programmes.

In spite of this common interpretation of programming's main goal, the last decade has seen a certain change in it. This is a result of the change in the very concept of economic growth which, bourgeois programming theoreticians believe, should, during the scientific and technological revolution, take account of the "quality of life". The new approach to the problems of economic growth rejects the lop-sided position demanding a concentration of all efforts in raising the gross national product. Those who support this new approach, including the American economists Samuelson and Galbraith, believe that to measure economic growth on the basis of changes in the GNP does not give a true picture of it, since such factors as the state of the environment are not taken into account. They think that the industrialised countries should virtually aim for a drop in economic growth rates, in order to avoid its "social costs". This became particularly topical in the mid-70s, when an economic recession became a reality, whether the programming theoreticians liked it or not.

The acute social conflicts have led to a superficial transformation of the "planning" activities of the state. Bourgeois economists write more and more frequently about the need for "social planning", such government programmes in a number of countries being called "socio-economic development plans". During the elaboration of France's seventh plan, efforts were made to determine indicators for social development. There are real grounds for such changes, since the state is assuming more and more of the costs involved in creating the overall conditions for the efficient functioning of capital—the financing of the education system, the training of personnel, urban construction, public health, and so on. Without affecting the essence of production relations, the bourgeois state is fulfilling the minimum of social tasks for ensuring favourable conditions for the

monopolies' activities. Hence the desire to advertise the social programmes publicly, while deliberately restricting detail on their content. Thus, the seventh French plan sets out a limited range of priority problems, while only general approaches are outlined for their solution. The procedure for taking these measures is not revealed; nor is any detailed description given of those in the socio-economic field.

Bourgeois economists investigating the problems of economic programming have chosen the term "indicative planning" to describe it. As they see it, this is synonymous to the terms "liberal" or "relaxed" planning, which they often use instead of, or in conjunction with, "indicative planning". "Most writers use the term 'indicative' in the wide sense to refer to any planning which depends on instruments that are of a 'non-coercive' or 'soft' character."<sup>1</sup> The way indicative planning is described most typically is that it involves the "education" of private entrepreneurs, using a method based on two interconnected processes. The first is a series of forums to collect primary information on the economy. The second involves the transformation of all the data obtained into a co-ordinated project for studying the market.

The programmes' targets take the form of recommendations, without always indicating where resources and means required for their attainment can be obtained. The central part of the programmes is thus made up of economic forecasts. Programming is essentially the determination and prediction of the possible state of the entire national economy and individual sectors for some period to come, assuming that the economy will continue to develop in accordance with existing trends and considering the influence of certain factors and some government measures to be taken in the future. It is such forecasts that are often called national programmes and economic development plans. Since the development programme of a capitalist country is always closely connected with the market, economic programming usually consists in attempts to predict the future state of the economy, depending on market fluctuations.

Although the majority of capitalist countries that have

<sup>1</sup> V. Lutz, *Central Planning for the Market Economy. An Analysis of the French Theory and Experience*, London, 1969, p. 53.

introduced economic programming have already accumulated some experience in fields such as the elaboration of programmes and the use of current economic policy instruments in their implementation, the multiple attempts by bourgeois economists to provide a theoretical background to economic programming as a method for centralised economic management under capitalism have been fruitless.

The lack of a unified theory of bourgeois economic programming constitutes factual recognition of capitalism's inability to plan its economy, a forced admission on the part of the contemporary bourgeoisie's ideologists that, under capitalism, with its antagonistic class relations, planned, balanced development on a national scale is impossible.

Bourgeois economists have not, however, given up. Recently, there have been increased theoretical searches in a somewhat different direction. This applies to the elaboration of so-called "national" concepts of long-term economic policy and programming, to the development of a theory of economic policy. The authors of such theories concentrate primarily on the problems of formulating and determining the goals of economic and social development, the choice of levers for ensuring the practical implementation of the proposed measures, and the formation of a set of such levers. Modern economic policy theories are tied in with so-called economic growth theories, whose purpose is to supply a model of a stably developing economy with full employment of productive capacity and manpower.

In spite of the certain differences between these national concepts (each of them reflects the specifics of a particular country's development, the scale and traditions of state-monopoly influence on the economy, the intensity of the political struggle, and so on), there are no serious differences of opinion between their authors concerning the interpretation of the goals and nature of economic policy at the given stage of capitalist development. They are unanimous that capitalism has ceased to be an automatically self-regulating system and that constant state intervention is required for it to function. They only disagree on the scale and methods of state intervention in economic affairs through programming, on the optimal correlation between centralised and decentralised management in the market economy, and on how to combine incentive and coercive measures in implementing the programmes. Certain suppor-

ters of "indicative" planning (Massé, Perroux, Shonfield, and others) propose the maximum expansion of state management possible under capitalism and the wider application of coercion with respect to private entrepreneurs. The domination of private property and the "atomistic" structure of capitalist society engendered by it act as an obstacle to any, however serious, attempts to apply coercive measures for restricting freedom of enterprise and freedom of exploitation. This is stressed by all foreign researchers into capitalist programming as the main difference between this form of economic management and planning in a socialist economy, which they call "normative" or "coercive" planning.

The immediate goal of indicative planning is to improve the supply of information required for decision-making in the private sector. Indicative planning is characterised by two elements: minimum coercion in implementation of the plan tasks and maximum freedom in decision-making. The indicative plan does not replace the market or the system of price formation. It simply adds the information available on the conditions under which they function. Bourgeois economists see this sort of planning as a system resting on the revelation of desired goals, rather than orders for attaining them. Indicative planning is based on prediction of future development, rather than modification of it. This informational aspect of capitalist programming is a sort of reflection of the recommendatory nature of the indicative plan, which sets not obligatory goals, but only so-called desired ones. Hence the small amount of detail on the indicators of the programmes, which are drawn up taking account only of the interconnection between the key macro-economic values, with detail provided up to the level of the leading economic sectors at best.

When "planning" is confined to the setting of general targets and recommendations, when decision-making is decentralised and the economic units are not under the immediate control of state management bodies, the only way to direct economic development along the lines outlined in the programme is to provide some material incentive to private firms. The incentive aspect of the plan is based on the state's application of a wide variety of economic incentives for "purchasing" the co-operation of private firms.

Direct and indirect subsidies, privileged depreciation con-



ditions, credit, controls over prices and wages and other such incentives might draw the attention of private entrepreneurs to the plan, and even make participation in its implementation attractive to some of them. It is obvious, however, that the capitalist will ignore any national plan and reject credit, tax and other privileges and priorities, if the economic situation promises him bigger benefits.

The impossibility of ensuring real control over the course of programme fulfilment under capitalism is a major reason for the "plans" in capitalist countries failing to be effective instruments of economic management. This is recognised even by bourgeois critics of programming. It means that indicative planning is incapable of fulfilling its chief function, that of avoiding spontaneous development and influencing its course.

The limited nature of capitalist programming is inbred. Since it operates on the "informational basis of the self-introduction principle", the programme a priori excludes the possibility of any situation arising that will require it to be reviewed. It follows in the wake of the production cycle, urges economic boom into an upswing and tries to soften the sharp fall during crises. The "indicative plan" is quite helpless when the need arises for a review of the programme and the application of stricter measures essentially rejecting the principle of "self-introduction", as confirmed by French planning practice.

The third French plan, for example, was typical. From the very start it became obvious that the plan's chief goal—to ensure a high rate of investment, given a low level of personal consumption—was simply unattainable. The danger arose of the plan collapsing altogether. Under the circumstances, the machinery of indicative planning proved incapable of resolving the problem. Stricter control measures had to be applied. Such "planning" can only really be effective if it is backed up with a coercive mechanism capable of redistributing priorities in the use of resources when conflict situations arise.

The methodology of capitalist programming is based on bourgeois economic theories—individual postulates of classical bourgeois political economy, Keynesian, neo-Keynesian arguments, growth theories, econometrics and management science. This book does not aim to explain these theories in detail, for Marxist economic literature contains

deep and detailed critical analyses of bourgeois economic theories and considers their influence on the formation of ideas concerning capitalist programming.

The point of departure for developing a set of instruments for state programming was provided by the analytical methods proposed by Keynes' economic theory. This does not mean that the theory of programming methods should be totally identified with Keynesianism. Keynes himself drew no conclusions at all concerning the need to elaborate state economic development programmes or a corresponding state economic policy. According to Emile James, Keynes "did not raise the question of the systematic control or planning, nor envisaged any important structural reform".<sup>1</sup> Yet Keynes' ideas exerted an influence on the development of capitalist programming. Keynesians developed a theory of growth. The neo-Keynesian growth theory postulates important for the programming methodology are: definition of the rate of growth as a function of accumulation in the national income and the efficiency of this accumulation; the presence of the Multiplier and Accelerator and the differentiation, in this context, between autonomous and induced investment; establishment that changes occur in the time coefficient of capital and material intensity and their influence on the structure of production. During the transition from the static Keynesian theory to the theory of growth, bourgeois economics took a major step in revealing the capital-product coefficient, which became one of the key parameters in elaborating the first programmes.<sup>2</sup> The new indicator reflected a certain link between the increase in fixed capital and the growth rate of the gross product required for a dynamic equilibrium, considering that investment creates not only income, but also new productive capacity.

In contrast to neo-Keynesian analysis, in neo-classical growth theories capital accumulation acts as one of the factors, together with manpower and technological progress,

<sup>1</sup> Emile James, *Histoire de la pensée économique au XX<sup>e</sup> siècle*, tome II, Après la "Théorie générale" de J. M. Keynes (1936), Presses Universitaires de France, Paris, 1955, pp. 343-44.

<sup>2</sup> Both average and marginal capital coefficients came into widespread use. In the capitalist countries, especially the Common Market, considerable work has been done on standardising the methods used in these calculations.

determining economic growth. It is technological progress that is given primary importance in economic regulation and programming. Research into the sphere of programming and forecasting in recent years has taken the form of a search for answers to three types of question: 1) What are the opportunities created by the use of modern production techniques? 2) What are the trends in further technological development, taking into account the impact of economic and social factors? 3) What technical changes would be desirable in order to ensure fulfilment of all the tasks put forward in the plan? The nature of these questions testifies that technological progress is allotted a major role as a factor promoting socio-economic development in both the theoretical investigations and state programmes for economic development.

In the search for answers, substantial efforts have been made on developing qualitative and quantitative methods for estimating the influence of various factors. In programming and forecasting theory, the qualitative methods are "scenarios", "systems analysis" and "goal analysis". Bourgeois researchers believe that the "writing of scenarios" constitutes an attempt to establish the logical course of events, indicative of a certain transition from the current situation to some future one, making it possible to gradually build up a general picture of the future. The drawing up of "scenarios" is somewhat reminiscent of military strategy. Its goal is to demonstrate the theoretical possibility or impossibility of fulfilling the tasks put forward, and to justify an active state policy for overcoming random trends in development.

In practice, it is descriptions based on assumptions concerning the overall distribution of consumer durables, the increase in free time, the share of "collective" consumption, and the extent of income fluctuations that are used more often. Such "scenarios" make it possible to pinpoint problems and determine crisis situations.

While systems analysis is connected with the determination of variants, goal analysis, given multigoal tasks, is used to assess the consequences of the particular choice made. To describe the logical links existing between the group of tasks and the group of resources, set out in a particular order, the concepts of a "tree of aims" and "decision tree" are employed.

Quantitative analysis of the role played by various factors in economic development provides part of the basis for building up a set of modern programming instruments: economic growth models, investment models and production functions, national accounts, etc.

Capitalist programming was originally descriptive in nature. It made use of gradual approximations to find solutions by trial and error. Later programming methods began to be based on a formal econometric approach to analysis of economic processes. The econometric approach involves formalisation of the interconnections in the economy in order to build a development model. In contrast to the descriptive approach, this makes it possible, during the elaboration of the programme, to measure the quantitative dependence between the parameters of the economic process and select an economic policy.

Capitalist programming has adopted the conclusions of econometric research and makes active use of the rich range of econometric methods. Government organisations engaged in national economic policy-making use mathematical economic models and elaborate economic programmes on their basis.

The building of models begins primarily with a definition of their purpose. This might be substantiation of economic policy, empirical testing of a hypothesis, economic forecasting, or a quantitative assessment of the effectiveness of state measures. Econometric models constitute a system of equations combining aggregate indicators for the national economy and reflecting certain economic correlations.

The macro-economic models used in programming can be divided into two groups according to the way decisions are made with respect to influence on economic processes. The first group consists of descriptive models that do not contain parameters connected with decision-making. These are a variety of determinate models of economic growth and the capitalist cycle and can be expressed by homogeneous first order linear equations and non-homogeneous linear equations. In this case they provide a picture of economic development in stationary and non-stationary states respectively. Models including equations of this type, but of a higher order, reflect cyclical fluctuations and long-term dynamics.

Only models with first order equations are used for mak-



ing a subjective choice of a development programme variant. The elements of the model are assumed to be in equilibrium within the confines of the concepts established in the models. For chiefly anti-cyclical policy purposes it is models with second and third order equations that are used. Such models also include those that do not yet involve the search for a solution but contain the principle of feedback and information of a historical nature. The first simple control models without a clearly formulated decision function may also be included in this group. Such intermediary models are used widely to decide short-term economic stabilisation measures.

The second group of models widespread in programming consists of models with decision vectors assumed to be an essential condition for the choice of socio-economic development criteria. Such models describe three periods: that preceding the transition (up to the time the programme comes into effect); the actual transitional period, during which control functions assist in transforming the initial economic structure into a new one, whose main features are determined by the criteria for choosing solutions or the normative form of the development goals; the period beyond the programme's time horizon.

The significance of the characteristics of these different econometric models should be noted. When programming was just developing, the first group of models was the most widely used, with macro-economic forecasts or estimates of the economic cycle being considered as the main elements. Economic forecasts provided only a background for the simulation of various government measures, whose influence on the economy was assessed subjectively.

As programming developed and the sphere of state intervention in the economy expanded, a quantitative method became necessary for assessing the results of each particular economic policy instrument's influence. In this context, new methods began to be used for elaborating the programmes. Hence the understandable interest in models with decision elements and in control models, in which the interconnections are analysed between state policy instruments and the response of the production machinery within the economic system. The approach to economic simulation principles also became more sophisticated. Beginning with the simplest models of a Keynesian type, cap-

italist programming turned to single-stage and multistage macro-economic models and control models. The diverse models used in economic simulation developed from short-term ones for finding ways to stabilise the economic system, to long-term models for the choice of economic policy, from single-sector descriptive to complex systems and multistage intersectoral dynamic ones. The transition from the simplest models to the elaboration of adaptive ones, including analysis of the effect resulting from the deliberate goal-oriented impact of government policy on economic development, reflects the expansion of the bourgeois state's economic functions.

The interpretation of the economic phenomena on which macro-economic multisectoral and sectoral models are built is inseparably linked with the concepts of the various trends in modern bourgeois economics. Considerable attention is focussed on the financial and material aspects of capitalist reproduction, while the problems of production relations are left out of the analysis, though it is these that in fact hold back the development of capitalism's productive forces.

State programming in many West European countries and Japan may be called partial planning. The indicative plan envisages not the elimination of the market and its laws, but assistance to the market through economic policy measures, while the state uses a specific, limited part of directly controlled resources in an attempt to affect the development of all the various economic elements.

The interaction between the part and the whole is placed by bourgeois economists at the basis of their analysis of the link between the attainment of overall national goals and the limited resources and means in the hands of the state. It can exercise a constant influence on the development dynamics of those elements on which the entire reproduction mechanism is functionally dependent. These elements are the volume and structure of public spending, investment, the volume of production in the nationalised sector, the size of subsidies for certain sectors and privileges (financial, material, etc.) for export sectors or may be represented other resources and means controlled by the state. The greater the divergence between the parameters controlled by the state, the less determinate become the results of their interaction. The same can be said about the

extent to which state programming is indicative and partial in nature. The narrower the range of instruments used to influence the economy and the smaller the volume of the various resources in the hands of the state, the less certain becomes the attainment of the goals set in the development programme. Thus, the scale of the influence exerted by state-controlled parameters on all the other elements of the economy varies.

In recent years, a tremendous interest has been shown in the problems of decision-making under conditions of indeterminacy. Not only state policy, but also the policy of entrepreneurs and those engaged in production, the reaction and demand on the part of consumers are studied by assessing the interaction between the various indicators of development and empirically testing the level of dependence. In investigations into the influence exerted by the economic policy of entrepreneurs or changes in the structure of consumer demand, the volumes and structure of public spending and government investment, which were previously taken as exogenous, can act as endogenous parameters in formalised models.

Research yielded a general model for the conditions of indeterminacy whose goal, taking into account external conditions and the availability of information on changes in the environment in the past, is to help find solutions during the transition from one structural state to another.

The general form of the economic system is represented by the following equations:

$$A_{t+1} = T_a (A_t, \Pi_t, D_t)$$

is the function for the transformation of the economy, where

$A_t$ —is the structural vector of the state of the system at moment  $t$ ;

$\Pi_t$ —is the structural vector of external conditions;

$D_t$ —is the decision vector;

$$D_t = T_a (A_{t-r}, H_{t-r}, V_t),$$

where  $V_t$ —is the vector of external conditions for the decision taker;

$\Pi_{t-r}$ —is the vector of past information on the period  $(t-r)$  at moment  $t$ ;

$A_{t-r}$ —is the state of the system at the moment  $(t-r)$  before the decision is taken.

In practice, in order to elaborate formalised constructions of this type between the elements of long-term policy for transforming the economy and the change in the elements of the economic system, the interdependence between them must be traced distinctly. In this it is usually assumed that the transformation of the existing structure takes place through a transition to a state of disequilibrium for the subsequent purpose of attaining a balance at a higher level. If the transition takes place starting from a state of imbalance, the development is accompanied by resource losses that cannot be covered by the gains from the disproportionate development. Thus, the nature of the capitalist economy excludes the possibility of attaining the degree of precision required. The indeterminacy of the very policy of the bourgeois state, resulting from the contradictory nature of the capitalist system and the growing complexity of all interconnections in economic, scientific, technological and social development, also exerts a negative impact.

The instability of state economic policy is also engendered by the contradictory nature of capitalist programming's long-term goals. The interconnection between long-term and short-term programming is not as clear in practice as it is in theory. Formal constructions cannot provide a reliable basis for choosing an economic policy also because, in such a relatively narrow field as economic forecasting, the degree of arbitrariness is quite great. Yet, even though a certain experience has been accumulated in economic forecasting and the forecasting of the development of technology, no satisfactory methods have been developed for co-ordinating forecasts in science and technology with economic development and their economic consequences in the social and humanitarian fields. This, in spite of the fact that, as the Secretariat of the UN Economic Commission for Europe asserts, a vital need is felt for such methods. Neither has social programming been developed as required.

All this prompts the conclusion that bourgeois economics is in acute need of a set of instruments for elaborating programmes that would make it possible, given limited controlled resources, to safeguard the "collective" interests



of the dominant classes, to maintain the "social equilibrium" of the capitalist system and, at the same time, leave the "sacred principle" of private property unaffected.

It should be stressed once more that the Marxist-Leninist political economic thesis correctly states that planned development is incompatible with the capitalist economy. Not a single capitalist state has so far managed to avoid the chief ills of the capitalist economy—crises, unemployment, idle productive capacity, inflation—in spite of introducing programming. Neither have they been able to avoid economic recessions. The growth rate of production attained by these countries at the turn of the 70s was nowhere near the target set in their economic programmes. In 1974-75, there was an unprecedented drop in the volume of production, which testifies that programming does not provide for effective management of productive forces nor eliminates imbalances in the development of the capitalist economy. Moreover, in some countries it even exacerbated the economic problems, making the working people's already difficult position even worse.

The supporters of the various socio-economic concepts argue fiercely about which is the most effective—the market economy with elements of state programming or centralised planning. Events themselves, however, are the judge. The last two decades have tested in practice both the planning systems in the socialist countries and the economic programming in a number of developed capitalist states. A comparison of per capita national income growth rates for the socialist and the capitalist countries testifies to the advantages of the socialist planned economy in ensuring the efficient use of national resources (see Table 1).

Table 1

Per Capita National Income Growth  
(1976 as a percentage of 1950)

USSR	513	USA	167
GDR	592	Britain	170
Poland	459	Italy	290
Romania	858	France	269
Czechoslovakia	324	FRG	324

It should be stressed that the socialist countries are experiencing high growth rates, even though their economic potentials are already quite considerable.

Capitalist activities are eloquent testimony to the failure of attempts by state-monopoly capitalism to use programming to achieve a planned and balanced national economy and thus stabilise economic development. This knocks the ground from under the bourgeois ideologists who support the pseudo-scientific theory of convergence and shows for what it really is the model they have thought up, that of "planned", "managed" capitalism, which has supposedly overcome anarchy and the random nature of its development.

In the course of the class and overall democratic struggle that is developing in the capitalist countries, a democratic alternative is being worked out to capitalist programming. The deep-rooted interests of the working-class and democratic movement require the unified imperialist strategy to be countered by the solidarity of the working class, its firm union with the working peasantry and progressive intellectuals, the joint activities of the broadest possible population groups. At the same time, the anti-democratic policy of the monopolies has to be countered by a democratic alternative in the shape of the economic, social and political demands of the working people. This concerns the elaboration and implementation of a social policy involving measures to gradually and systematically limit the dominance of the monopolies in the national economy, undermine state-monopoly capitalism and restrict the sphere of influence of its legal, economic and financial levers.

The first such measure must be nationalisation of the big banks and monopolised industries. "The new and existing national concerns would be democratically managed, i.e., with the active participation and under the control of worker representatives, to assure development of the productive forces and satisfaction of the people's requirements. This would be attended by the introduction of an economic and social development programme and democratic tax reform."<sup>1</sup> To put through a democratic nationalisation is to deprive the privileged minority of big capital owners of

<sup>1</sup> R. Guyot, "For an Advanced Democracy, for a Socialist France", *World Marxist Review*, No. 4, April 1969, p. 2.

their excessive power over the economy and finances. French Communists believe that, together with democratic planning, nationalisation would make it possible to accomplish a genuine rational development of regions, while maintaining a harmonious distribution of economic activities throughout the country.

The idea of struggling to establish national democracy as a transitional stage towards the socialist transformation of society is shared by other Communist parties. The choice that has proved both correct and fruitful is the strategy of broad unions of the working class in pursuit of a reform and transformation of economic and social structures. According to the concept of the Italian Communist Party, "the policy of programming demands central guidance. . . . However, the aims of the programming policy cannot be realised unless there is also broad decentralisation and broad democratic participation."<sup>1</sup> These ideas form the basis of the democratic alternative to capitalist programming in Italy. Today, the struggle for a democratic alternative to capitalist programming is of exceptional importance. During this struggle, the working people not only stand up for their own economic interests; they also go through a good schooling in political struggle, the final goal of which is to build socialism. Only under socialism, which will eliminate private ownership of the key means of production once and for all, can the working people take the political power into their own hands and then carry out really scientific, effective and genuinely democratic planning to meet the fundamental interests of the entire nation.

### The Essence and Forms of State Planning in the Developing Countries

The specific essence of capitalist programming is determined by the maturity of bourgeois society's relations of production and the irreconcilable conflict of interests between its chief classes. The conditions in the developing countries, especially those facing the choice of development strategy, are such that the essence and forms of their eco-

<sup>1</sup> A. Cossutta, "Present Tasks", *World Marxist Review*, No. 10, October 1977, p. 51.

nomic planning must be assessed somewhat differently from those in the capitalist states. This applies to the greatest extent to countries that have started to build the foundations of a socialist economy. The essence and functions of economic planning there are inevitably unique, for the specific forms of the transition to the building of a socialist economy must be varied, depending on all the conditions under which the development towards socialism begins. The local differences and specifics of economic structure, ways of life and the state of readiness of the population, and attempts to implement individual plans must all be reflected in the particular path to socialism.

The last twenty years have seen a great diversity of attempts by the state in the newly-free countries to take increasing advantage of the opportunities for exerting a planned influence on the course of economic development. Here, planning is seen as the most effective method for speeding up economic development and accomplishing social transformations. As a process involving a purposeful influence on the economy, planning in some form or other is today practised in the majority of developing countries.

As early as the 30s, the colonial and dependent countries showed considerable interest in the elaboration and implementation of the first Soviet five-year plan. In 1928, the Mexican President Plutarco Calles proposed drawing up a plan based on strict accounting. In early 1933, the eminent statesman M. Visvesvaraya of the Mysore principality put forward a plan for doubling the national income. Five years later, India set up her first National Planning Committee of the Indian National Congress Party under Nehru. In 1933, the Siamese democrat Pridy Panomiong was forced to flee the country because his programme for state economic control was called "Communist intrigues" by local reactionaries. In 1960, fourteen Asian countries, seven African ones, and two Latin American ones were experimenting with planning, while six years later the figures were already 18, 26 and 20 respectively. Nowadays, virtually all the newly-free countries apply economic development programmes in some form or other.

The development of economic planning and programming in the emerging countries was a result of a number of factors. The productive forces in the majority of these countries are at a low level, especially where semi-subsistence



economies prevail. This low level of development of productive forces in general does not in itself give rise to the need for attaining balanced production development by means of state economic planning. Yet the abstractly theoretical lack of correspondence between the low level of development of productive forces and the needs of planning remains in force only if the emerging countries are considered in isolation from the whole system of world social, political and economic relations and assuming that these countries are not even trying to speed up their development or taking effective measures to attain such targets.

The need to overcome the developing countries' backwardness is behind the persistent search for the most effective economic levers. For the developing countries, the possibility of planned, balanced development is particularly attractive.

It would be wrong to think that the developing countries' economic structures contain absolutely no sectors that need to be backed up by a certain economic balance. All the modern, non-traditional production based on industrial methods can only develop efficiently if its individual components are strictly balanced. Moreover, the development of the public economy in this sphere of production also creates certain opportunities for conscious regulation of production in order to achieve such a balance.

The extremely limited nature of resources results in development (especially of capital-intensive sectors, including the infrastructure) being accomplished either partially or completely through state channels. The public sector that is taking shape in a number of developing countries is the objective basis for the emergence and development of state programming. These countries' unprofitable position on the world market also determines the need for state influence on internal and external exchange, and state control over the use of resources. Another incorrect idea is that there is no conflict between the increasing involvement of the state in the economy and the spontaneous development trends engendered by the particular development stage in the capitalist and pre-capitalist relations in these countries. Typical of these is a complex intertwining of various trends that inevitably leave their imprint on state economic planning, determining its social character and the limits of its real possibilities.

In the industrialised capitalist countries, economic programming is conditioned by the high level of development of productive forces, the all-round merger of the state with the monopoly associations, and the impact of the economic competition between the socialist and the capitalist systems, which invariably confronts the major capitalist countries with the urgent task of ensuring stable economic growth rates. In the developing countries, however, economic planning arose not only from the need to speed up the development of backward productive forces, but also from the further intensification of their contradictions with the capitalist world, the influence of the socialist countries' success in planned, balanced development, and the lack of promise held out for the emerging countries by following in the wake of the capitalist countries.

Planning in the developing countries cannot be seen as an attempt to present the desirable as the actual. The state does try to plan economic development here, though this is an extremely complex and contradictory phenomenon, as much so as the very choice of a future development strategy. The direction in which the material and social conditions for the functioning of state planning develop depends on the choice of development course—either socialist or capitalist. The entire system of world ties that confronts the developing countries with this choice demonstrates the unpromising prospects held out for them by the capitalist system, within which the scientific and technological revolution creates a new danger—that of a new form of slavery, called "technological colonialism", for the developing countries.

The need to apply economic planning ideas and instruments in the developing countries in order to resolve their complex problems in as short a time as possible arises from the ineffectiveness of the market mechanism in stimulating development under the specific conditions of the developing world. This need came to be understood in a difficult struggle against the traditional concept of the world's peripheral areas' lack of development prospects, the unchanging nature of their social structure and the impossibility of deliberately changing traditional production techniques.

"The stubborn resistance," wrote the well-known Latin American economist Raul Prebisch, "to which the very

idea of industrialisation gave rise up to the early 1950s may be remembered, as also the dispute over economic planning and the repeated objection to financing public enterprises, even when they were well run."<sup>1</sup> The imperialists imposed such ideas in the most diverse ways.

Recently, the developing countries have started to progress from just a feeling of the need for changes to the idea of more efficient practical use of all available resources for speeding up development, regardless of their origin, with the help of an effective state policy. This policy is applied to economic relations and methods of regulating them, in particular economic planning.

Bourgeois theoreticians for many years imposed on the emerging nations the idea of levelling up their economic development by attaining an overall balance within the framework of the capitalist world economic system. Application of the criteria of comparative benefits would, in their opinion, eventually produce distribution of resources ensuring advantages to all partners, including the newly-free countries. Through the global use of market regulators, bourgeois theoreticians promised the developing countries a worthy place in an uncertain future.

The economic history of capitalism in both developed and backward regions has revealed the exact opposite—a permanent imbalance in development, and a concentration of wealth and poverty at different poles of the market economy. By means of the entire market mechanism, the world capitalist economy imposes a constant tendency towards imbalance on the developing countries, which come in for most of the fluctuations in foreign economic factors that have a negative economic effect. The winning of political independence by the countries of Asia, Africa and Latin America raises the need to change this situation and compensate the former colonies for the way they had been plundered.

For all the illusory possibility of balancing the "unorganised" outflow and "organised" inflow of resources, the actions of the developing countries contain an extremely important premise: world capitalist production and the

<sup>1</sup> *Towards a Global Strategy of Development*. Report by the Secretary-General of the United Nations Conference on Trade and Development to the Second Session of the Conference, United Nations, New York, 1968, p. 63.

world resource market must be consciously regulated, taking into account the interests of the economically backward countries. The former colonies cannot confine themselves to regulating only foreign economic relations. The state inevitably expands its economic functions and directs them inwards, into its own national economy.

The majority of developing countries have taken up the idea of planned industrialisation, the key to which would be replacing imported consumer goods and capital goods with ones made locally or by the developing countries of the given region. Yet this idea is being implemented within the framework of the existing system of world economic ties, which means that the market hampers planned industrialisation, so the first attempts to put this policy into practice came up against insoluble contradictions. In planning the development of the diverse contemporary industries, the state proceeds from the availability of actual elements of fixed capital, i.e., the output from which the fixed assets of modern enterprises are formed. The main suppliers of such goods are, however, the economically developed countries, whose economic policy, including the channelling of investment flows, is based on the concept of the world market economy. Imperialist quarters restrict deliveries of investment goods to the developing countries in order to hamper a technological and economic balance being established in the world economy.

The market mechanism's inability to solve the developing countries' urgent problems confronts them with the choice of either stagnating and consolidating their role as the economic periphery of the world economy, or going over to active state intervention in the economy. The latter must go as far as directly influencing internal production and implementing diverse forms of indirect regulation of the resources turnover between the various economic structures in order to mobilise all available means for speeding up development. This multilevel combination, from global economic policy to day-to-day supervision of small enterprise operations in different economic sectors, provides the basis for co-ordinating long-term development goals with the solution of current problems.

The creation of a highly efficient economy using the latest technology does not exclude, but rather, in the initial stages, actually demands the development and sub-



sequent transformation of traditional industries, too. This sector of the economy is a major source of internal resources for restructuring the economy. The developing countries need to extend the boundaries of the planned economy and include an increasing number of economic units.

The fact that many countries have recognised the need for industrialisation, with the priority development of public, rather than private capitalist enterprises in the capital goods industries, is very indicative. The developing states have thus gone beyond the bourgeois theory and practice of "limited" co-operation between the authorities and private initiative. This is understandable, for developed capitalism cannot and does not want to grant the developing countries any advantages, so they have to be taken by force and, in this case, by state force.

The idea of regulation and then planned development is being modified under the impact of the developing world's growing interest in Marxist planning theory and practice in the socialist countries.

For this reason, state economic planning has become the focus of a fierce ideological and economic struggle—a struggle to subordinate state planning to the interests of the international monopolies and the big national bourgeoisie vis-à-vis the development of this planning in the interests of the progressive forces of the developing countries, and those of the working class.

It is worth noting that, as Gunnar Myrdal writes, "quite apart from, and often contradicting, their ideological preferences at home, all Western governments as well as their business people are supporters of state planning in South Asia".<sup>1</sup> To elaborate, this support consists in subordinating state planning, both ideologically and practically, to the interests of the national and Western monopolies. In this, monopolistic quarters proceed from the development of state planning in the newly-free countries and try to direct this planning along the lines of capitalist programming.

Myrdal's statement also demonstrates the inconsistency of bourgeois theoreticians and their supporters in the developing world concerning the limits to regulation and di-

<sup>1</sup> Gunnar Myrdal, *Op. cit.*, p. 728.

rect state planning as a result of the contradictory nature of the capitalist system itself. With respect to the developing countries, this has substantial socio-economic consequences. Bourgeois theories declare that no "revolution in property relations" is required and paint a picture of social transformation on the basis of so-called "limited", "democratic capitalism", the "planned" and "mixed economy". They allot the national bourgeois state the role of economic transforming force, presenting it as the "economic executive and civil servant". Yet they retain all the controlling positions and resources of the developing economy for the capitalist sector and the monopolies, regardless of the substantial growth of the public sector.

Owing to the specific social conditions, the planned management of the multistructured economies of the developing countries is not the same thing as socialist planning or capitalist programming in the industrialised bourgeois states. Previously, bourgeois theoreticians described planning as an attribute of the centralised economy, but now most of them believe planning to be a neutral instrument. At the same time, planning is a social and historical category, the effectiveness of which depends on the existence of specific social relations.

The nature of planning in the developing countries is specific to them, as is the meaning of the term "planning" in this context. By introducing planning measures, the state tries to provide an impetus to the development of the backward economy's productive forces. These measures include long-term forecasting, the planning of investment in the public sector on the intersectoral and sectoral level and on that of the individual investment project, current financial planning, individual state regulation measures applied to the private sector and not always linked together in a single system, and a variety of socio-economic reforms. Depending on the country's level of economic development, its political structure, property relations, and so on, different combinations are possible of these various forms of planning and regulation.

On the whole, the state's influence in the developing countries on economic development processes should be regarded as undeveloped, partial economic planning. This applies to the vast majority of countries with a low level of production, with diverse property relations and an ar-

chaic economic structure, where only individual elements of planning are employed.

The improvement of partial planning takes place in conjunction with the overall socio-economic development of each individual country. The initial form of state planning evolves either towards capitalist programming or socialist planning, the latter making possible a gradual transition from partial to overall planning. The initial conditions for this transition are connected with deep socio-economic transformations in society and, most important, with changes in property relations.

The socio-economic transformation of the countries not following a capitalist course of development makes it possible for them to start applying many planning measures and, what is more, planning of the public sector might become the dominant part. This sort of development creates an opportunity for the developing countries to apply the planning methods that have been used to advantage in the USSR and the other socialist countries.

The countries developing in a capitalist direction use elements of forecasting, regulation, and programming of the public sector for exerting a state influence on economic development. The various forms of state regulation of economic development on the national, sectoral and regional planes, forecasting of the long-term trends in the production of individual items, macro-economic variables, the temporal distribution of investment in the medium term within the framework of projects and sectoral programmes, determination of the priorities for and volume of financing, and social transformations are the specific planning activities carried out in the developing countries. Depending on the level of development of individual countries, the combination of various social structures, and the political doctrines of the ruling circles, these forms of programming and planning are applied to differing degrees.

In accordance with the chosen criterion, planning in the developing countries can, as already noted, be classified by its social form (capitalist programming, planning using certain socialist planning ideas and methods, economic management methods, given backward social structures), as well as by purpose (organisational and budgetary planning, structural and anti-cyclical planning) and by the extent to which it embraces the economy (partial sectoral,

regional, programmes for the public sector, investment programmes, macro-economic "national economic" planning).

Planning in most developing countries is today essentially indicative, but it differs qualitatively from "planning" of the same name in the capitalist countries, as evidenced by the specifics of the way it is applied and the fundamentally different targets. Apart from state capitalism and the private capitalist structure, the economies of many developing countries also contain a sphere embracing pre-capitalist economic forms. The presence of conservative structures and the absence or low level of development of many modern social institutions prompt the developing countries to integrate planning with a system of socio-economic and political transformations.

Attempts by the state to speed up economic development using certain planning measures, without introducing any social reforms, lead only to a further enrichment of elite groups in some of the newly-free countries. Planners from Africa noted with reason at their 7th conference, in 1976, that over the previous fifteen years the goals of development had been, on the whole, attained but that the even greater income inequality, growth of overt and covert unemployment, low labour productivity, continuing high level of illiteracy, low level of medical care and growing poverty of the people were good cause to reconsider development priorities. Thus, the progressive forces of the developing countries see an ever greater need for transforming economic planning into planning of social and economic development.

Those countries that are developing in a non-capitalist direction are establishing a system of effective planning capable of taking in all the key factors of growth and development. Initially, it may be trained on the formation of an all-embracing centralised system of management. Thanks not only to economic, but also administrative regulation methods, it is possible to create the necessary preconditions for the "economisation" of the planning process and preparation of decentralised decision-making and plan implementation. This planning system will provide the public sector with specific plan targets, and the private sector and sphere of exchange will be drawn into the planning of the reproduction process through the nationalisation of intermediary trading bodies.



In many African and some Asian countries, planning is still in its initial stages, meaning that the overall organisational and legal conditions are still forming for later developing the activities of the planning bodies. The stress in this is laid on developing the statistical services, training administrators, introducing up-to-date production skills to state and economic personnel, and so on. The plans drawn up in this way are primarily in the form of drafts and forecasts that, as a rule, are not backed up by an adequate set of measures for implementing the plan.

Organisational and budgetary planning is widespread in the developing countries. It does not extend beyond planning the annual budget and distribution of public investment. In addition, measures are taken to rationalise the activities of the state apparatus.

Structural planning in medium- and long-term plans geared mainly to transforming socio-economic structures, including industrialising the economy, is practised in such countries as India and Algeria. The main drawback to this sort of planning is that it is incomplete: the medium-term plans are not supplemented by a sufficiently detailed machinery for implementing them, in particular, a system of economic policy measures and annual plans.

Anti-cyclical planning presumes the existence of ramified local statistical-market information services, of a central planning organisation and the possibility of reacting to changes in internal and external market situations within the framework of the annual plan. This type of planning, which is particularly effective in combination with long- and medium-term planning, is still only being introduced in individual countries: India, Venezuela and some others. In the majority of other countries, the conditions required for applying such forms of planning have not yet been created.

Sectoral planning in the developing countries has been practised since the end of the 40s and now has a fairly developed set of methods, covering not only branches of industry, but also such an important sphere as the assessment of projects, i.e., methods for choosing between investment projects and assessing their efficiency.

Regional planning is a major component of the developing countries' planning systems, for their economies are subject to sharp regional imbalances. The practical intro-

duction of such planning is not yet, however, carried out on any wide scale. In recent years, a number of countries have been attempting to implement multinational planning—so-called "harmonisation" of plans.

The most widespread form of plan in the developing world is the public sector programme, including budget planning, outlines of the main indicators for the public sector at various times, and assessment of investment projects financed mainly from the budget or foreign loans. Investment programmes form the skeleton for planning. Recently, methods have been developed for regulating capital investment in the private sector, too.

The macro-economic "planning" (sometimes called global planning) practised widely in many developing countries is largely based on the traditional Western methodology of macro-economic forecasting. It has, it is true, undergone a number of changes recently and is adapting to the conditions of the multistructured economies of Asian and Latin American countries. Many economists in the developing world favour a less complicated planning technique that is better adapted to the newly-free countries. For instance, the participants in the 3rd conference of African planners stated that, for Africa, what is needed is a more practical, sufficiently detailed, but simple set of planning instruments oriented on the economy that is multistructured in the social, economic and technological sense, with unstable, rapidly developing links.

The governments of many developing countries with poorly developed productive forces and an undeveloped socio-economic structure, that have not yet made the final choice of socio-economic development course, see planning as a means for speeding up the development of productive forces. Here planning is limited, covering only a few economic processes, and its methods are primitive. In essence, under these conditions it is not planning at all, but organisational and economic measures carried out by the state without any specific social orientation.

In the whole of the vast developing world, the best correspondence between all the development conditions and overall national planning is observed in the countries that have chosen a socialist orientation. This gives grounds to hope that, as the given group of countries develops, in the consistent process of social transformations and accumula-

tion of experience in economic management, state planning will really become an effective instrument for development.

This is because the countries that are not developing in a capitalist way have a significant and influential public sector and progressive state authorities. In this group of countries, the power belongs to revolutionary-democratic forces, while the public sector dominates among industries determining the structure and development course of the national economy. New economic relations in such countries are provided with an increasingly broad base, while private capitalist ones are gradually restricted, thus furnishing the conditions for effective planning of the national economy. In the countries with a socialist orientation, positive shifts can be traced in the direction of socialism, both from the global point of view—that of the balance in the class struggle tipping in favour of revolutionary-democratic forces—and the local one—the growth in the effectiveness of the state's economic activities, indicated by the effectiveness of national planning.

Considering the developing countries with a socialist orientation as being in a transitional period, but with a clearly defined socialist direction, the overall shift in the essence of state economic planning is understandable. This shift is conditioned by the fact that all state activities are geared to creating the preconditions for the development of the new social system. State planning in this context is an essential component of such work. Without the development and improvement of planning, it is hard to imagine the possibility of the state and co-operative sectors developing and improving, hard to effectively utilise scientific and technological advances in the interests of the broad population, especially those of the working people, hard to estimate and mobilise the resources required for socio-economic reforms.

In socialist-oriented countries, state planning is evidently a legal form of expression of this orientation, for here it corresponds better to the overall development course than it does in countries following different lines. Here the desirable and the actual will, in the future, draw closer together. The form and essence act on and with each other. As the influence of the public sector on socio-economic affairs grows, not only do the general goals pro-

claimed in the national plans receive a suitable expression in the development process itself; the necessary resources for their attainment are also increasingly provided. Moreover, the actual, not just alleged, correspondence between the goals of the national development plans and the interests of the working people makes it possible to mobilise the creative activities of the overwhelming majority of the population in solving the problems facing the developing countries.

The development conditions pertaining in the countries with a socialist orientation also create the prerequisites for planning to be more realistic. This is conditioned by the degree of the state's social responsibility that it proclaimed in its political and economic programme, expressed mainly in the plans for social and economic development.

The broad social base of such a state not only creates an opportunity for exerting a multifaceted influence on the economy; it also causes the country to make a more sober assessment of its potential and the reality of the targets that can be attained in the interests of the people. Thus, the "target function" of planning in the socialist-oriented countries presumes the setting of basically feasible goals. It cannot be determined by illusory ideas or pursue consciously overstated goals, which are often oriented on the so-called demonstration effect. It is not hard to find such goals among the various forms of scientific and technological achievement and amaze neighbouring countries by applying the latest technology, though only in a very narrow sphere. Such "prestige"-type development obviously has little in common with the genuine interests of the developing countries.

Moreover, the formulation of the goals must fit into the fixed time interval well enough for the state apparatus and its entire huge army of active participants in implementing the plans to precisely assess the results of their work in pursuit of the set goals. This does not mean, of course, a formal correspondence between results and plan tasks. The main thing, evidently, is the intensity and degree of influence exerted by the state and those participating in plan implementation on the country's entire social development. It is these economic planning factors that are the focus of the socialist-oriented countries' attention today.



All the objective circumstances outlined above allow the countries with a socialist orientation to make more intensive use of a whole series of state planning elements that help in directing development towards a planned, balanced economy. This is evidenced by many factors, included both among the methodological foundations of planning and the partial elements of planning practice. The plans for the development of countries in a non-capitalist direction include larger volumes of resources controlled by the state than do those of other countries, for the public sector and the controlled co-operative sector are heading for the dominant position. The fact that the state controls substantial resources also determines the need for progress in the scale and organisation of planning, the methodology and development of the instruments for accomplishing and supervising plan fulfilment.

The general trend in the development of planning in the socialist-oriented newly-free countries consists in a real extension of the bounds of planning as the public sector grows in size. It is still early to talk of a qualitative leap conditioned by the quantitative parameters of such a real basis for planning, but the major trend in the expansion of the state planning sphere will inevitably lead to qualitative changes. At the same time, a whole complex of factors must be borne in mind that cause these changes to be delayed. A substantial influence is exerted here by so-called subjective factors, i.e., the lack of planning experience, the conservatism of the administrative apparatus, the small numbers of trained planners among the advanced social strata, the lack of ramified and unified statistical services, and so on, for previously all the state's activities were subordinated to only two functions: the police and the fiscal.

Algeria's choice of a socialist development course brought planning to the fore in the sphere of state management. In the first few years after independence, a real basis for planning was laid. In 1969-71, the public sector already accounted for over 60 per cent of output in large and medium-scale industry and more than 62 per cent of all industrial workers were employed in government enterprises. It was during this period that the contours took shape of the state apparatus for economic management and planning. Initially, the planning services came under

the President's Council, but in 1970 a State Secretariat for Planning was set up with ministerial status. The country's development along non-capitalist lines further increased the opportunities for state planning on the basis of the public sector in Algeria's industry. In 1977, its share in industry was 96 per cent of all fixed assets, 82 per cent of gross output, and 77.7 per cent of the labour force.

The creation of a ramified system of planning bodies at all levels of the economy has only just begun in the developing countries. This is, of course, taking place during a fierce political struggle. For a start, there is the reluctance of many ministries to accept the central planning apparatus as superior to them; second, there are the deliberate delays in furnishing information on the state of any sector and, third, the direct hostility displayed by the opponents of the socialist orientation. This hostility is often manifested in a desire to discredit the new government planning apparatus.

The attempts made by imperialist forces to compromise the work of the central planning bodies are geared to intensifying the difficulties under which the state is operating in the key spheres, for the tasks entrusted by the government to the planning bodies are of extreme importance. This was made quite clear in the Decree of August 15, 1969 of the President of the Republic of Guinea. Accordingly, the State Secretariat for Planning and Statistics was to a) co-ordinate all economic affairs in the country within the bounds of government policy; b) elaborate draft long-term plans for development and improve the planning methodology; c) mobilise and utilise private national and foreign capital within the framework of the plan; d) supervise plan fulfilment.

Such broad and responsible tasks set by the socialist-oriented developing countries for their planning bodies raise the question of exactly how much authority such bodies have and what legal status they enjoy. The stage of search and experimentation in this sphere reflects all the complexity of the transition from the former legal basis of the colonial-type state to a state with broad economic management and planning functions.

The consolidation process is observed not only in the organisation of state planning services, but also in attempts

to formulate a planning methodology suited to the tasks in hand.

Planning in the developing countries is only taking its first steps. These are extremely difficult and being taken under complex economic and political conditions. In the majority of countries that are at present implementing economic development plans, an annual gross output growth rate of from 3 to 14 per cent was envisaged to speed up their development by 50 or 100 per cent. Between 1960 and 1965, the actual mean growth rate for all the developing countries was 4.4 per cent per annum, while the rise in the per capita national income was 3 dollars. Some progress has been made in recent years. Already a substantial number of these countries have mean annual GNP growth rates of over 5 per cent (UN estimates of the average for 37 countries put the figure at 5.5 per cent between 1971 and 1975), though many of them have not attained their planned growth rates. The new plans drawn up for the period up to 1980 for this group of 37 countries are characterised by an average of 7.5 per cent for the annual growth rate of the GNP.

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Thus, a general description of the essence of state over-all economic planning in the socialist countries, of programming in the capitalist countries and attempts at planning in the developing ones indicates that such state activities result from the need to attain an economic balance, given a high level of development of productive forces and the social nature of production in the world economy as a whole.

Analysis of the reasons for the emergence and development of state activities of this type in countries with different social systems indicates that the consolidation and development of socialism as a world system constitute major reasons for the spread of planning in whatever form. Without the victory of socialism, the emergence and practice of national planning and programming in any country in the world today would be unthinkable.

Under socialism, there is a correspondence between the content of planning, its capabilities and the conditions for its effective practice, for one of the laws governing this

type of social system dictates its planned, balanced nature.

Attempts to regulate and programme on the scale of the capitalist national economy cannot ensure balanced development and thereby do away with the spontaneous and anarchical development of all social production. The reasons for this lie in the domination of private ownership of the means of production, one of them being that the private monopolies still constitute the basis of the capitalist economy. The state is not in control of the economy and is ultimately subordinate to monopoly capital. The growth of public property, the expansion of the economic functions of the state and concentration in its hands of the surplus value and national wealth are far from unlimited. There are bounds that they cannot cross without directly jeopardising the capitalist system itself. Another reason is that modern state-monopoly capitalism cannot reconstruct the capitalist economy on the basis of the forms of socialised production inherent in it. The monopolies cannot eliminate competition even in the sectors they control almost in their entirety. Monopoly continues to coexist with competition, large-scale production with small-scale one. Nor can state monopoly change the situation. Competition still exists between the giant monopolies, between these and non-monopolistic outsiders, and so on. Under the domination of competitive relations, state capitalist programming often intensifies the competition.

Such are the objective limits to state-monopoly programming, which are responsible for its contradictory and restricted nature, and its essence, geared to maintaining capitalist production relations. The unfeasibility of planned, balanced development under the capitalist economic system clearly stresses the need for the working class to struggle for social transformation, including for genuine democratic overall national planning.

Both theoretical analysis and the history itself indicate that, no matter what efforts the bourgeois state may take, it will not be able to abolish the laws governing capitalist reproduction. The state planning in recent years has been geared not so much to speeding up economic development, as to seeking ways out of the crisis, ways to soften the most acute social conflicts and disturbances. The chief contradictions of capitalism are not overcome



but driven inwards. New contradictions are added to them resulting from the activities of the bourgeois state. These include, as the International Meeting of Communist and Workers' Parties in 1969 pointed out, "the contradiction between the social character of present-day production and the state-monopoly nature of its regulation".<sup>1</sup>

The state's influence in the developing countries on economic processes in general should be regarded as undeveloped partial economic planning using only individual elements of planning measures. The development of this planning follows the general course of socio-economic development in the given country. The initial form of planning activities evolves either towards capitalist programming or planning similar to that practised in the socialist countries. In the latter case, a gradual transition is possible from partial to overall planning. Preconditions for this transition to overall planning are, however, deep socio-economic transformations in society and, most important—a change in the property relations. The socio-economic transformation in the countries with a socialist orientation makes it possible to apply planning measures on a wider scale, while the transition to overall planning creates an opportunity for using the methods that have proved themselves in the Soviet Union and the other socialist states.

The rapid economic growth rates of these countries for many years now indicate the considerable advantages offered to the developing countries by application of the entire complex of socio-economic measures, including planning instruments. The conditions under which planning took shape in the socialist countries differed, of course, from those at present pertaining in the majority of developing countries. The most important difference is the fundamental one in the socio-economic structure of social production, distribution and consumption, as well as the social institutions conditioned by this structure. Yet, in spite of such considerable differences, the developing countries can resolve certain overall problems involved in economic development and planning by applying the ex-

perience of the socialist countries. Such problems include the task of closing, or at least reducing, the gap between the levels of development of the developing countries and the industrialised ones. This can be achieved by speeding up economic growth, substantially increasing the scale of accumulation, rapidly industrialising the economy and, consequently, fundamentally restructuring it.

<sup>1</sup> *International Meeting of Communist and Workers' Parties, Moscow 1969*, p. 19.

## Chapter 2

### **MACRO-ECONOMIC PLANNING AND PROGRAMMING METHODS: PLANNING AND PROGRAMMING OF THE RATE AND STRUCTURE OF PRODUCTION**

The methods used to elaborate plans and programmes for the development of a country's economy are closely interlinked with the essence and goals of overall national planning and programming. They are formed and applied by state bodies, enterprises and organisations. The methods used by states with similar socio-economic conditions for planning and programming also have common features, since these act as an applied instrument of particular economic concepts. There is an interpenetration of the methods for drawing up plans and programmes, but this is limited by the nature of a particular type of planning or programming, the essence of its targets and the scale of the state's influence on the economy. In any case, methods are modified to suit particular socio-economic conditions. This applies to even what would seem to be the most "neutral" methods and schemes, for any formalised system is used for economic analysis and attempts to plan the actual economy, with all its specific features. These general points are taken into account in the following consideration of the methods of planning and programming. Thus, the establishment and improvement of these methods cannot be viewed outside the framework of socio-economic development (and practice has shown the futility of attempts to apply modern sophisticated mathematical economic models and computers for drawing up plans in countries that lack even elementary statistical data).

This chapter will discuss the methods used to determine general (macro-) economic indicators for economic development plans and programmes, and especially those that describe the volume of production and use of resources on the national scale, the overall rate of economic growth, the growth rates of the key sectors in their interrelationships, the nature of structural changes in the country's economy in the plan or forecast period. These parameters can provide the basis for subsequent detailed sectoral planning, as well as constituting the results of co-ordinated and summarised sectoral draft plans and aggregate data of other functional sections of the plans for socio-economic development. The use of macro-economic indicators in this way is typical of plans for the development of the socialist economy. In the capitalist and developing countries, macro-economic parameters of the growth of and changes in the structure of the economy, worked out in varying degrees of detail, are usually declared the actual content of programmes and forecasts. In spite of the differences in the place and role of such indicators in socialist planning and capitalist programming, the fact that they apply to the same object—the economy as a whole—provides a basis not only for making a comparative analysis of the methods of macro-economic planning, but also for revealing overall differences in the methods used. This will make it possible in the next chapter to pinpoint the approach used for determining the specifics of the methods applied in substantiating plans and programmes for the individual types of resource utilisation.

#### **Development of National Economic Planning Methods in the Soviet Union**

The over fifty years of planning in the Soviet Union furnish a rich body of information for outlining the order of procedure in national economic planning, its principles and methods corresponding to various social conditions and stages in economic development. In contrast to all other forms of economic development, planned development implies a consciously maintained balance of all the elements of the economy in the pursuit of specific goals.



In socialist society, economic planning embraces the planned, balanced organisation of the social production process for the purposes of providing for the well-being and free all-round development of all members of society. This concept of economic planning makes it possible to determine the foundations on which to base the methodological principles corresponding to particular stages in the development of the socialist economy.

On the way towards the overall goal of satisfying the growing requirements of socialist society and its individual members to the maximum, intermediary tasks emerged, their character determined by the level of development of productive forces and the forms of social relations. This, as well as the extent to which the state is in control of the nation's resources, in turn determined the methods employed for elaborating development plans for the Soviet Union.

In the Soviet Union, economic planning has gone through three successive stages:

- planning in the multistructured economy;
- planning during the period when the foundations of the socialist economy were being laid;
- planning in the developed socialist society.

In accordance with this breakdown, both the historically specific methods and the general features of socialist planning methods characteristic of all Soviet economic history can be analysed.

Only ten years (1917-27) were needed for economic planning in post-revolutionary Russia to acquire a theoretical basis and to be transformed from partial to all-embracing planning in accordance with the methodological basis. This period can be regarded as the one in which the foundations were laid for directive planning, as the one when the transition was made from indirect regulation to direct state management of the country's economic affairs. The widespread use of indirect methods for influencing the economy in the initial period of Soviet planning was due not only to the lack of experience of state economic management, but also to the presence of a substantial private sector in both agriculture and trade.

Initially, after the Revolution, considerable attention was focussed on drawing up and implementing current programmes for individual branches and sectors, similar

to the so-called "partial programmes" as they are now called in the West. In the first six months of 1918, a draft plan was drawn up in the Soviet Union covering coal mining and steel smelting, the production of agricultural machinery, grain procurement, and capital construction for individual sectors. The same year work began on elaborating plans for the development of the economy in the key industrial centres of the country: the plan for the restoration and development of the metal industry in Petrograd (since 1924 called Leningrad), the plan for the development of the metal industry in the country's eastern areas. In the second half of 1918, most of the country's large-scale enterprises were operating according to plans approved by government bodies. These first attempts at partial planning were disrupted by the Civil War (1918-20), during which production programming could only take the form of summarising production facilities and co-ordinating the chief public outlays with the resources available.

The conditions of the postwar economic disruption dictated the need for the most rapid possible solution to such current problems connected with eliminating the consequences of the destruction as hunger, disease and unemployment. All the country's resources and forces were channelled into this. Even then, however, it was clear that, without the development of a unified system of planned management, oriented on solving problems in the long run, it would be impossible to ensure the economy's rapid recovery and to create a technical base corresponding to the goals of building socialism.

The theoretical and practical work was geared to determining the principles for such planned management. The results of the initial attempts undertaken between 1918 and 1922 were development of the entire economy according to a single state plan; concentration of forces and means on fulfilling the state's key tasks; the directive, i.e., obligatory nature of the tasks confirmed in the plans and the strict specification of recipients of plans; the scientific, technological and economic substantiation of plans; the combination of long-term and short-term, sectoral and territorial planning; observance of the demands of democratic centralism, which consists essentially in a combination of centralised state supervision

with infinitely varied initiatives from local authorities and all participants in social production. The practical implementation of these points was achieved by elaborating the first unified long-term programme for economic development, which was called the GOELRO plan (the State Plan for the Electrification of Russia), as well as the gradual transformation of current planning into an instrument for realising this programme.

The elaboration of the GOELRO plan was initiated in the spring of 1918, but the Civil War and period of foreign military intervention dragged out the time taken to complete it. In October 1920, work on the plan for the electrification of Russia was virtually complete and the draft was handed over to the 8th All-Russia Congress of Soviets for consideration. On the Congress's instructions, the Council of People's Commissars (the Government of the Russian Federation) finished the work on the plan and, in December 1921, presented it to the 9th All-Russia Congress of Soviets, which confirmed the draft. The plan for electrification became the state law for economic construction for the next 10 to 15 years.

In order to assess the GOELRO plan properly, it should be remembered what Russia was like at that time. Owing to the lack of fuel and raw materials, most factories and plants were not operating and the railways were paralysed. Disruption and hunger reigned in the country. In 1920, output was extremely low: compared with 1913, only 3 per cent of the pig iron was produced, 4.6 per cent of the steel, 30 per cent of the coal, 15 per cent of the cotton thread, and so on. This was all intensified by the economic blockade imposed by the capitalist countries.

The first long-term planning document determined the targets for the next 10 to 15 years for the development of industry, transport and electrification of the economy. An 85 per cent increase in industrial output, compared with 1913, was envisaged, including about 300 per cent for electricity, 95 per cent for pig iron, 55 per cent for steel, 110 per cent for coal, 860 per cent for peat, 30-80 per cent for oil, 420 per cent for cement, and 250 per cent for paper.

The plan also provided for the construction, during the 10 to 15 years, of 30 regional electric power stations with a total capacity of 1,750 thousand kw (this figure seems

modest by modern standards, but at the time it was enormous), as well as the unification of the electric power stations into a single grid. This made it possible to supply electricity over large distances to a multitude of population centres and enterprises. Thus, electrification embraced a substantial area in the European part of the country.

Electrification was the key feature of the long-term plan for the restructuring and development of the economy, providing for an upswing in production and labour productivity. Concentration of electricity, generated by large-scale regional power stations, created favourable conditions for increasing electric capacity in a relatively short time and for introducing highly economical and multipurpose electric motors instead of steam engines. Ultimately, all this furthered the concentration and rapid growth of machine industry, the intensification and mechanisation of production processes, and a sharp rise in labour productivity as the main condition for development. The GOELRO plan specified not only the volume of industrial production, but also the balance links between sectors and regions in their future development, taking account of the need to implement the latest scientific and technological achievements of the time.

The GOELRO plan was a major step forward in the development of planning. It contained the first plans for the development of individual economic regions and outlined the prospects for further changes in the location of industry by region. In the GOELRO plan, for the first time ever, the method of balances was used, uniting regional and sectoral economic plans into a unified system.

During the elaboration of the GOELRO plan, a set of indicators was also developed. The plans for the first years contained targets only for certain sectors, not co-ordinated by some group of indicators (these were the plans for coal mining, the procurement and distribution of grain, the production of metal, and freight haulage), but the set of indicators of the GOELRO plan covered a fairly broad sphere of national economic development. The change in the scope and indicators of planning reflected the dialectical process by which new social relations were created in the country, the development and consolidation of socialist property.



The GOELRO plan included indicators not only for the construction of power stations, but also for the expansion of electrification in connection with the development and restoration of the entire national economy. The plan contained six major sections: 1) electrification and the unified national economic plan; 2) electrification and the fuel supply; 3) electricity and hydropower; 4) electricity and agriculture; 5) electricity and transport; 6) electricity and industry.

The targets set in the plan were for the production of 20 key types of industrial output: steel, pig iron, iron ore, aluminium, copper, coal, oil, peat, brick, cement, and so on. Industry was divided into eight branches: fuel extraction, mining, metallurgy and metal-working, the textile industry, the food industry, building materials, the paper industry, the chemical industry, including oil-refining and coking. Each branch was set targets for the volume of output (in gold roubles), number of workers (in thousands) and capacity (in thousand horse-power). The development of industry was planned not only as a whole, but also for the two main subdepartments: the production of capital goods and of consumer goods.

The GOELRO plan also contained a number of targets with respect to the development of agriculture: for expanding the sown area, bringing new lands under the plough, expanding the production of agricultural machinery and the application of mineral fertilisers. It did not, however, contain indicators for agricultural output, because petty-commodity forms still predominated in the countryside. Neither did it envisage targets for the collectivisation of agriculture, or indicators for production efficiency. A doubling of output was, however, to be achieved primarily through a growth in labour productivity, given a smaller rise in the number of workers.

The plan for the electrification of Russia also contained important targets for raising the standard of living. Specific tasks were outlined for increasing the output of the cotton and wool industries, the potato, starch and treacle industry, sugar production and other branches. The plan provided for a replacement of imported leather goods by home-made ones. Calculations were made with respect to supplying the population with footwear. The set of indicators for the standard of living could not yet, of

course, occupy a major place in the specific numerical part of the plan.

The GOELRO plan was the first experiment in compiling a single state plan covering all the key spheres of the development of social production. At the same time, the drawing up of this plan laid the foundations for a specific organisational system of planning and provided experience of planning work on a national scale.

The first long-term programme was the basis for day-to-day planning, the tasks of which were assessed primarily from the angle of the overall goals of the long-term plan. Moreover, as experience developed and accumulated, it turned out that the boards of economic bodies and planning bodies could not confine themselves simply to combining and summing the plans of trusts and individual enterprises. So, as early as 1924, the planning bodies, together with enterprises and trusts, drew the preliminary outlines of a plan taking account of the absorptive capacity of the market and other economic conditions. It should be noted that, at the time, input-output tables were already being used to estimate the size of the market. To this end tables were drawn up of intersectoral ties in industry for 1926 to 1928. The control figures for each sector were co-ordinated with the indicators of related branches, and on this basis control figures compiled for the development of the national economy as a whole.

Planning targets in the form of control figures were a major achievement in the sphere of short-term planning, but they also had their weaknesses. The lack of an exact balance result of the development of the national economy reduced the effectiveness of control figures as directives. They embraced only the sphere of production, without reflecting social shifts. The methods used for compiling the control figures were inadequate, being based on extrapolation of the rates of economic growth in pre-revolutionary Russia. The limited nature of the plans, oriented only on the current demands of the market, consisted in the fact that they reproduced mainly the balances that had taken shape previously in the national economy. In order to speed up growth, however, a change in this balance was required, a fundamental restructuring of the economy through industrialisation and a transition from primitive agriculture to machine production.

The control figures for 1926/27 were compiled with the participation of the economic bodies of the Union republics and departments. The main method used was the balance method, which constituted a major step forward in the development of planning. The control figures for this year contained indications for the development of the economy and economic regions, as well as the growth of sectors of social and cultural development.

The new conditions for the building of socialism required a further specification of the plan for laying the foundations of the socialist economy. The new tasks involved in the tremendous construction work and the enormous socio-economic transformations necessitated a corresponding long-term plan. The First Five-Year Plan for the development of the national economy of the USSR (1928-32) was just what was required.

In December 1927, directives were confirmed concerning the drawing up of the First Five-Year Plan—an all-embracing programme of social transformations, heralding a transition to a new stage in economic construction. By this time, the share of the socialist sector in the production of the national income already stood at 44 per cent. After the directives on the First Five-Year Plan were confirmed, work got into full swing in the country on elaborating it, work in which not only central, all-Union and government bodies took part, but also republican and sectoral management bodies.

The essence of the First Five-Year Plan can be described as follows. The targets were given in two versions: "initial" and "optimal" (with greater growth rates). The key problems were determined by the rates and proportions of economic development, the scale and structure of investment, the nature of the building programme and the socio-economic aspect of the plan.

The first of the plan's three volumes indicated the initial positions from which it was drawn up, estimated the economic level of the country's development, set out the targets of the building programme, discussed aspects of the training of qualified personnel, the growth of material production and labour productivity, consumption, market equilibrium, and price policy. It also reflected the financial programme of the plan, the state and possible development of economic ties with the world economy, and set out the

social programme of the five-year plan. The appendix contained a summary table of the key indicators (population, assets, investment, national income, electrification, industry, agriculture, transport, construction, the budget and money circulation, financing of the national economy, social and cultural establishments, price indices); tables of the key indicators of the structure of the Soviet economy in the five-year plan: power (manpower, the energy supply, the energy balance), the standard of living and the people's cultural level, industrialisation, technological reconstruction and rationalisation, distribution; tables of the key indicators of the five-year plan for the national economy compared with 1913 and the previous five-year period; the processes of socialisation and organisation into co-operatives, investment in fixed assets, the national income of the USSR, the plan for the financing of the national economy, the balance of the financing of investment from the public sector for the five-year period (separately for initial and optimal variants).

The first part of the second volume contained the plan's building and production programmes: the power base for reconstruction of the national economy, industry, agriculture, water and forest management, raw material problems, building, and transport. The tables of the section on industry presented the chief indicators of the industry planned by the Supreme Council of National Economy (SCNE): assets at year end (fixed and circulating), gross and commercial output in general and by branch; qualitative indicators (material inputs, labour productivity, production costs, and so on) and financial indicators; the production of the key items: 29 for group A (capital goods) and 15 for group B (consumer goods); capital construction, the financial plan, and the consolidated balance for the fuel supply.

The second part of this volume was devoted to socio-economic problems, co-operatives, trade, social and cultural development, public catering, communications and the financial plan.

Aspects of economic regionalisation, planning tasks and specialisation of regions, interregional relations, growth rates and the share of regions were discussed in the third volume. Detailed calculations were made for each area: natural resources, manpower and the energy-to-worker ra-



tio, the region's economic complex, the tasks involved in reconstruction and the plans for individual branches. The tables in this section presented the main indicators of the five-year plan for the national economy by republic and region, the share of republics and regions in the USSR, the chief indicators for industry, investment in state industry by sector and region, fixed assets, indicators for agriculture (the head of cattle, output in physical terms), the structure of production in physical units and gross output for republics.

In the elaboration of the First Five-Year Plan, the foundations were laid of the methodology of national economic planning, including principles that are still valid today. An interconnected system was drawn up of indicators covering the development of all the key sectors, Union republics and economic regions. The balance method was developed considerably. Material balances were drawn up for about 50 main types of industrial output, as well as for the chief types of agricultural raw material. These tables embraced the main material balances.

Under the broad programme, the first to be drawn up were the chief value balances, including the consolidated financial plan for the whole country and for the key sectors, the state and local budgets, the balance of the economy's fixed assets, of the production of the national income and its distribution and use, of the population's money incomes and outlays and calculations of effective demand, the balance of demand and supply for consumer goods.

It should be noted that all the main balance calculations for the First Five-Year Plan were made on the social plane (the public, co-operative and private sectors). As a result, a detailed description was obtained of the socialisation of production, the development and consolidation of the socialist sector in the national economy.

During the first five-year period, a set of balances for labour resources was created because of the acute need to provide the national economy with manpower, especially skilled personnel, as well as to gradually eliminate unemployment and reduce the agrarian overpopulation. Together with the consolidated balance of labour resources, the demand was calculated for experts and skilled workers for industry, agriculture, construction and transport. These calculations made it possible to outline a programme for the

on-the-job training of personnel in factory training schools and a plan for the development of the network of secondary and higher educational establishments.

Success in the socialisation of production allowed state planning to embrace agriculture, petty-commodity industry and trade, and advance from control figures in these sectors to annual national economic plans. The first annual plan was drawn up for 1934. The transition from control figures to state plans meant that planning and regulation of the multistructured economy was replaced by planning of the socialist economy, recommendations and proposals became directives; reference targets became a plan with force of law. At the same time, the creation of a set of all-embracing planning raised, alongside the overall task of economic growth, that of attaining (under growth conditions) balanced development of all branches and sectors of the economy. Under all-embracing planning, balanced economic development—an objective necessity dictated by the very nature of social production based on the division of labour—was furnished with a real basis.

Thus, as the planned management of the economy developed extensively, planning methods were becoming more sophisticated and subordinated to the task of mobilising all resources for solving specific socio-economic problems. The basis for this was provided by the balance method.

The harmonious development of the economy presumes a correspondence between the volume of production of a specific commodity and the demand for it. In this, not only the country's internal needs are taken into account, but also the amount of output to be exported. The balance of any product can be written in the following form:

#### *I. Resources*

#### *II. Distribution*

$$P + Im + S_0$$

$$Ind + K + Con + E = S_1$$

*P*—production

*Ind*—industrial consumption  
(intermediary demand)

*Im*—imports

*K*—capital construction

*S*<sub>0</sub>—stocks at beginning  
of year

*Con*—non-productive  
consumption

*E*—exports

*S*<sub>1</sub>—stocks

Material balances are compiled on different planning levels. They can be drawn up both in central and supply bodies and in individual enterprises. This simple form (simple only with respect to the scheme for an individual balance) of balance calculations constitutes a useful instrument for elaborating and substantiating plans for the development of individual types of production in countries that have started to apply certain elements of planning.

The essence of the balance method consists in co-ordinating requirements and resources on the scale of all social production, related sectors and production units of the national economy, ensuring a balance of all elements of the economy. The balance method makes it possible to establish and co-ordinate the physical-material and value proportions in the national economy and thus ensure the unity of plans. In planning practice, material, labour and financial balances are used, these being interlinked and reflecting the various aspects of the single process of extended socialist reproduction.

The co-ordination of the production and consumption of specific types of product in the plan is accomplished by means of material balances (for steel, electricity, and the like), in which resources and the demand for the given product are compared. These balances reflect the interconnection between the branches of production. Directly related to the material balances are the balances of fixed assets and productive capacity, which allow planners to determine the required increase in these for the planned volume of production.

The labour resource balances are drawn up to ensure that sufficient manpower is available for the planned scale of production, social and cultural activities. They compare the amount of manpower available with the demand for it in the plan period. Labour resource balances are compiled for the USSR as a whole, for individual republics and regions, making it possible to plan the distribution of labour resources by economic sector, the training of personnel, etc.

The financial balances reflect the formation and distribution of the incomes of the state, socialist enterprises, and the population. The main balances are those of government revenues and spending and the balance of the income and outlays of the population, which are drawn up for the whole country, Union republics, territories and districts. The balances of the people's incomes and expenditures are need-

ed in order to determine the population's consumer demand and to plan the production of consumer goods and retail turnover, to plan the scale of payable services, to elaborate the cash plan for the State Bank, and so on.

These different types of balance make up the set of proportions in reproduction in their organic interconnection. Their great diversity can, somewhat arbitrarily, be divided into three main groups:

- economic proportions;
- intersectoral proportions;
- intrasectoral or production proportions.

The specifics of each type determine the application of specific balance calculations, which, combined, comprise the unified balance planning method. Balances are elaborated in a certain procedural sequence.

As socialist transformations are accomplished, long-term planning comes gradually to embrace an increasingly wide range of indicators applying to the growth of the economy, science, technology, culture, and public health (in 1937, the socialist sector provided 99 per cent of the national income).

The complete dominion of public ownership of the means of production provided the conditions for direct planning of agriculture, as well as of the retail trade. The opportunity arose for working out a unified state plan envisaging directive targets for all sectors of the economy. The planning of financial matters and money circulation became consolidated.

By the end of the first five-year period in the USSR, a powerful industry had been established. In the country's eastern regions, a new coal and metallurgical base had been set up and new light industry centres had been established in Central Asia and Western Siberia. Over the five years, more than 1,500 new factories and plants were commissioned in all.

The First Soviet Five-Year Plan achieved major successes in the electrification of the country. At the beginning of it, in 1928, of the thirty electric power stations envisaged by the GOELRO plan, seven were in operation, eight under construction and five on the drawing boards. The total capacity of all the existing power stations in 1928 was 1,905,000 kw, while generating capacity for 1.5 million kw was in the pipeline. The main work on implement-



ing the GOELRO plan was carried out during the first five-year period. In 1930, the doubling of the prewar level of industrial production envisaged in the plan for the electrification of Russia was achieved. In 1934, when the GOELRO plan had been in force for its minimum period of ten years, its electricity generation targets had already been attained. By the end of that year, regional power stations in the USSR had a capacity of 2,376,000 kw, which meant that the programme for building electricity-generating capacity had been exceeded.

During the elaboration of the Second Five-Year Plan, for 1933 to 1937, the plan targets were set in a considerably more scientific manner, which was furthered largely by the widespread involvement of the Academy of Sciences and many research institutes in the planning work. Alongside the main trends in technological progress, specific targets were set with respect to the level of electrification and mechanisation of the key production processes, the introduction of sophisticated production techniques, the mastering of new and progressive types of machinery, equipment and material.

The expansion and growing complexity of intraindustrial, intersectoral and interregional links required the state plan to include production targets covering the output of 120 industries and the socialist sector in agriculture. In order to ensure rational proportions in the development of the national economy, wider use had to be made of the balance method. The set of material balances created during the elaboration of the Second Five-Year Plan embraced all the key types of industrial and agricultural output. A five-year balance was drawn up for machinery and equipment, and macro-economic synthetic balances were further developed. The consolidated financial balance was now based on more detailed calculations of production and circulation costs.

The Second Five-Year Plan was drawn up on both the sectoral (ministry and department) and regional (Union republic and economic region) levels. The list of building projects compiled by USSR Gosplan included over a thousand major items.

The enormous scale of the economy covered by planned management dictated the need for planning to take account not only of balancing goals and resources. As the economy

developed, the problem of co-ordination became increasingly acute. The growing complexity of the interconnections in the economy, as a result of the spread of industrial modes of production, could only be taken into account if the plan provided for a comprehensive solution to both sectoral and national economic problems.

As early as the years of the Second Five-Year Plan, the idea of comprehensive programming began to acquire growing significance. In the beginning, this approach was applied in considering a number of large-scale industrial projects. One example of the comprehensive approach to elaborating an intersectoral project at that time was the construction of the Urals-Kuznetsk complex, where coal mining and metallurgy were combined with the chemical production and engineering that was to serve the growing iron-and-steel and chemical industry, given a corresponding solution to the transport problem, the regionalisation of agriculture and the creation of a powerful electrical energy base.

The national economic planning methods developed during the first two five-year plan periods (1928-37) provided the basis for drawing up subsequent five-year and annual plans. The expansion of the number of interconnected tasks solved within the framework of the five-year plans increased the urgency of improving the planning methodology by economic and academic organisations on elaborating methods for a comprehensive substantiation of economic decisions but it was interrupted by World War II, which necessitated the restructuring of all economic work and management of the economy. The flexibility of the short-term plans and economic decisions also determined the nature of the methods used during the war years. Planning became even more centralised. USSR Gosplan carried out the direct planning of the production and distribution of virtually all major resources.

During the transition to peacetime economy, the organisation of planning naturally underwent considerable changes. After the end of the war and the period during which the war-ravaged economy was being restored, the planning bodies, in addition to doing considerable work on compiling five-year and annual plans, continued to improve the set of instruments for elaborating national economic plans.

When preparing the Fifth Five-Year Plan (1951-55), USSR Gosplan introduced a series of measures to improve the methodology of planning. Comprehensive plans for ministries and departments embracing all the key sections of economic activities of enterprises and sectors—the production of output, capital construction, labour, production costs, and so on—were presented in the forms and indicators of the Fifth Five-Year Plan. For each Union republic, a unified plan was drawn up, with plans for the development of Moscow and Leningrad being elaborated separately. Planning of the mean annual growth of productive capacity began. The plan for agriculture contained indicators describing the balances of the incomes of collective and state farms. For transport, calculations of the balance of key types of freight haulage were introduced. The Fifth Five-Year Plan was the first to include labour balances for economic regions. One interesting new feature was an index for the rise in the purchasing power of the rouble. A considerable place in Gosplan's work on the Fifth Five-Year Plan belonged to the problems involved in the balance of the national economy, the calculations of which also contained some important new features. In particular, estimates of the supply of materials for industry and the provision of consumer goods for the people were of considerable interest. After the war, in addition to the five-year and annual plans, the planning bodies began to elaborate long-term economic programmes, too.

The year 1959 saw the beginning of a major new stage in long-term planning: the elaboration of a draft plan for the development of the Soviet economy for 1961 to 1980. A special state body—the State Economic Council of the USSR—was set up to carry out this work, in which a large number of scientific and design organisations also took part. The main results of the planning for 1961 to 1980 are contained in the documents of the 22nd CPSU Congress.

The chief method used for drawing up the draft plan for 1961 to 1980 was calculation of the volume and structure of material production, determination of the time limits for attaining a particular production level (or per capita production level) for the key types of product. Preliminary balance calculations were used of aggregate national economic indicators. The main instrument was cost-to-performance calculations, applied primarily on the sectoral

plane. In addition, the level and structure of production were determined for both capital and consumer goods production on the basis of a specific target for raising the level of popular consumption and improving its structure. Thus, at this stage, the distinguishing feature of long-term planning was the increased role played by elaboration of problems connected with the standard of living and social progress.

This was manifested, first, in the fact that such calculations had never been so broad and comprehensive, embracing the growth of incomes and the development of their forms, the volume and structure of material goods and services consumption, the provision of housing and amenities, improvement in living conditions for families and in the position of women, the maintenance of children and the non-able-bodied, medical care, education and training and, above all, of young people. They also included the all-round development of society's cultural life, the development of social relations in the countryside, the material preconditions for overcoming the existing differences between physical and mental work, improvement of distribution relations, and so on. Thus, an attempt was made to draw up a comprehensive programme for social transformation, describing planned measures and determining the necessary resources.

Second, the indicators for the standard of living and social progress acted as the point of departure for planning the level and structure of production.

An assessment of the overall methodological substantiation in five-year and long-term planning in this period indicates that the main method used for a long time in the initial stages of forward planning was that of variant approximations. Beginning from the elaboration of the Seven-Year Plan (1959-65), determination of the key macro-economic indicators (of the balance of the national economy) started to be applied in practice for specifying the national economic plan. This method was developed further in the building and application of aggregate models of economic growth and of intersectoral models.

Modern planning in the USSR includes the entire complex of economic and cultural development, and all aspects of the economy. The planning bodies and management services resolve complex problems in co-ordinating the activi-



ties of literally hundreds of thousands of industrial, agricultural, transport and other production enterprises and an enormous network of trade, culture and service ones. The national economic plan is co-ordinated by working out not only synthetic (macro-economic) balances like that for the national economy and the other types outlined above (both aggregate and functional), but also a very complex system of material balances and plans (in both physical and value terms) for the distribution of specific resources. Such balances and the distribution plans drawn up by USSR Gosplan now number around two thousand. These balances include the key types of raw and other material, fuel and energy, equipment and components.<sup>1</sup> The volume of this work is incomparable with that carried out by USSR Gosplan before the last war in preparing the Third Five-Year Plan, when it elaborated only 248 balances for raw and other materials and fuel, as well as 104 for equipment. The scope of the work is characterised by more than just the number of balance calculations a year, however. USSR Gosplan, in addition to elaborating balances for every year, carries out extremely complicated work on calculating sets of balances for the five-year period and the long term. A quantitative idea of this work is provided by the number of material balances compiled for the Ninth and Tenth Five-Year plans, as well as for the period up to 1990 (see Table 2).

The overall number of balances and distribution plans drawn up by the entire state management and planning system on the level of all-Union and republican ministries and departments is about 40,000, including 13,000 worked out by the central supply bodies.

One particular feature of national economic planning in the USSR, distinguishing it from economic programming and partial planning, is that the state plan for the development of the national economy embraces the operations of all the country's enterprises. The state plan includes provision of all enterprises with raw and other materials, fuel,

<sup>1</sup> The share of output covered by the balances compiled by USSR Gosplan is 99 per cent for iron and steel, 78 per cent for non-ferrous metals, 95 per cent for oil products, 90 per cent for chemical and commercial rubber goods, 94 per cent for building materials and 65 per cent for machinery and equipment (in value terms).

energy, the necessary goods, manpower and financial resources. It also includes the establishment of the main channels for marketing products and the consumer group for which they are intended.

Table 2

	1971-75	1976-80	1976-90
Total of balances drawn up	235	232	154
Including:			
rolled iron and steel	10	13	6
general metal goods	3	4	4
pipes	20	14	8
non-ferrous metals	12	8	8
raw material for the iron- and-steel industry	4	4	5
fuel	11	15	10
oil products	14	9	7
oil	—	1	1
electricity	1	1	1
thermal energy	1	1	1
chemicals and commercial rubber goods	32	35	14
timber materials	6	6	6
paper	23	21	4
building materials	7	7	6
light industry	9	11	11
consumer goods	12	11	10
foodstuffs	14	5	5
ethyl alcohol	—	1	1
equipment	56	62	46

Today, Soviet planning and management cover all the branches of material production (industry, agriculture, communications, transport, and so on), the sphere of circulation and services, education, the development of culture and science. They embrace all stages in social reproduction—production, circulation, distribution and consumption. This creates considerable opportunities for mobilising the country's resources and using them to speed up economic development and raise the standard of living. This all-embracing planning system in the USSR is still being developed.

Soviet experience of national economic planning shows that the drawing up of the plan must be preceded by de-

tailed analysis of the economy's development for the pre-plan period, assessment of the current level of development, the scale of renewable resources, determination of the possibilities for forecasting existing, new and just emerging trends in the economy. A comparison of the existing level and main trends of development with the long-term socio-economic targets makes it possible to determine the specific goals for the coming plan period. By deciding the order of priority of the various tasks, succession of the individual stages in planning and calculations can be determined. Thus, the planning process depends on the level of development of production and social relations, as well as the nature of the tasks involved in the development of the economy.

The concepts of the elaboration of the national economic plan are:

- planning on the basis of sectoral schemes;
- comprehensive planning;
- optimal planning.

It is the first of these that is used most widely. The second concept has been introduced over the last ten years into the experimental work on preparing the information for current and medium-term plans. The third concept is still being researched, but application of its individual elements has already proved advantageous in resolving local problems.

In the first few years after the 1917 Revolution, Soviet Russia had, of course, a very low economic potential, which meant that the entire complex of tremendous socio-economic problems could not be resolved simultaneously. These tasks included achieving economic independence, creating a modern industrial base for re-equipping all branches and sectors of the economy, and raising the material and cultural standard of living. Since the standards of living and culture are primarily a result of material production in general, the first of these tasks was regarded not only as the goal of development plans, but also as a means for solving the main problems facing the economy. This meant that the required resources had to be allocated chiefly for the development of the key economic sectors.

The concept of drawing up national economic plans on the basis of planning the growth of individual sectors, and even individual subsectors, came into use in the late

20s and remained in use right until the entire complex of modern interconnections between the sectors of the Soviet economy had been created. It took the growth in the volume of production by sector of heavy industry, that is increments in the production of fuel, metal, electricity, and so on, as the point of departure for calculating the whole national economic plan. The possible output of such products was assessed on the basis of the maximum concentration of all available resources. Other sectors were allotted resources to the extent that they promoted the growth of heavy industry.

The difficulty of this procedure for national economic planning was that, to determine the scale of production in the branches of heavy industry, the economy's demand for their output must be known, as well as the quantity of resources available for the development of all the sectors supplying heavy industry.

Thus, in order to solve the "partial problem", an overall scheme of the plan is required, while this is itself the final goal of the planning calculations. This contradiction was overcome in practice by increasing the range of branches and sectors covered by the planning calculations, making continual adjustments to the preliminary drafts while the initial unbalanced variant of the plan was specified. To do so, not only were an increasing number of sectors drawn into the calculations, but also all types of resource—material resources, manpower, financial means, etc., and their effectiveness was specified.

The results of the calculations allowed planners to determine the balanced volumes of investment, provided with material resources and manpower, to co-ordinate the rise in wages with that in the output of consumer goods produced by the light and food industries and agriculture. Thus, the unified system of the national state plan determined the scale of production, the volume of investment, their material and financial provision, the rise in the people's nominal and real incomes, and estimated the efficiency with which all available resources were used.

This planning scheme included an approach that ensured fundamental changes in the structure of the national economy. Even when the obligatory tasks were confined to specific sectors or branches of the economy their ful-



filment exercised a substantial influence on the development of the economy as a whole.

For example, the first long-term plan (the GOELRO plan), worked out in the Soviet Union in 1920, was initially confined to the development of electricity generation and was meant for a fifteen-year period. Even this plan, however, was not considered in isolation from the development of the economy. Right from the start, it was taken as the central point of departure from which to tackle other tasks, especially ones connected with the production of commodities requiring an expansion of the electricity network, and then a more general plan was drawn up for the economy as a whole.

These specifics of planning on the basis of sectoral drafts reflected the possibilities and corresponded to the tasks of the period when, first, the Soviet economy's industrial base was being established and, then, the economy was being rebuilt after World War II.

The rapid development of the Soviet national economy led to the formation of a completely new economy, incomparable with that at the initial period of socialist construction. Now the country has more than 300,000 large and medium-size enterprises. A highly developed social economy with over 300 branches and sub-branches of industry has been created. A huge quantity of consumer goods produced in the country and a wide range of services, from scientific ones to simple repairs, are at the disposal of the Soviet population. All this means that the national economy cannot be regarded as a one-way system, in which resources are concentrated in a particular sector to speed up its growth. The complex system of interconnections necessitates the co-ordinated development of all elements of the economy, all aspects of socio-economic affairs. This means that there is only one approach suited to the national economy as the subject of planning, and that is a comprehensive one. Such a complex system as the modern socialist economy can, in planning, only be regarded as a unified whole, which predetermines inevitable changes in the methods and techniques used in drawing up the national economic plan, considering the increasingly integrated nature of the economy.

Even during analysis of the results of development and determination of the tasks involved in further growth, the

need arises for a comprehensive review of the development prospects for each sector within the framework of the entire national economy. This was particularly clear during the formulation of the targets for the development of Soviet industry during the ninth and tenth five-year periods.

As can be seen from the guidelines of the 24th CPSU Congress, the main target for industry during the ninth five-year plan period consisted in expanding and improving the industrial base for development of the socialist economy, especially agriculture and related sectors, in raising the technical level and efficiency of production and fundamentally improving the quality of output. In the tenth five-year plan period, the main task for industry was to improve the supply of quality output to meet the demand of the economy and the population and to provide for the technological re-equipment and intensification of production in all sectors.

This task cannot be carried out successfully without a further development of industry itself. The foundation of the country's economic might and the further rise in the people's well-being is still heavy industry, which provides for technological progress, the development of the entire national economy and consolidation of the Soviet state's defence potential.

The development of heavy industry also assumes particular significance because, at the current stage, all sectors of the Soviet economy have become more dependent on one another and these interconnections are most concentrated around industry. Industrial production methods are being increasingly introduced into all sectors of the national economy. The industrialisation process embraces all aspects of life today, hence it is clear that the demand for industrial goods is unlimited. Yet certain specific tasks still have to be taken as the basis for assessing the demands on industry at the present stage.

The accomplishment of industrial development implies that not only industry, but each economic sector must have a sufficient quantity of up-to-date means of production providing for higher labour productivity. The problem consists in deciding just what is a "sufficient" quantity of such means of production and the level to which labour productivity must be raised in each sector.

If the target is the further industrial development of all sectors, the model for comparison must evidently be the most industrialised sector of the national economy, i.e., industry itself. Here, however, the question arises as to how it is possible to compare the levels of industrial development in different branches of industry, agriculture and construction.

In order to find out the extent of a sector's industrialisation, the quantity of means of production required by one worker to produce the same amount of output in each sector can be compared. For this purpose, such indicators as the quantity of output produced, the national income and the fixed assets-to-worker ratio, for example in 1969 and 1974, are compared.

**Assets-to-Worker Ratio and Labour Productivity by Sector**  
(thousands of roubles per worker in current prices)

Economic sector	Fixed assets		Gross output		National income	
	1969	1974	1969	1974	1969	1974
Industry	6.7	10.7	12.7	45.4	4.5	5.8
Agriculture	3.5	6.3	3.7	5.2	2.1	2.8
Construction	2.0	3.1	7.0	8.4	3.0	3.8

The figures in the table show that, regardless of the increase in the assets-to-worker ratio and the efficiency of labour during the five-year period, the gap between the levels of these indicators for separate sectors remained virtually unchanged in spite of the substantial growth in means of labour in agriculture. The most productive workers are those employed in industry. In 1974, each of these produced 5,800 roubles' worth of national income, while each worker in agriculture produced only 2,800. The assets-to-worker ratio in industry is seen to be almost double that in agriculture.

Each economic sector naturally has its own specifics. For instance, the data in the table above show that, even given its lower assets-to-worker ratio, in the building industry one worker produces almost 1.4 times more national income than in agriculture, but productivity is low-

er than in industry. The building industry's better indicators than those of agriculture are due to the fact that the work is seasonally adjusted, while agriculture, especially crop growing, is characterised by its seasonal nature and great concentration of work during sowing and harvesting. This, in particular, determines the need for agriculture to be supplied with more of all sorts of implements, mechanisms and industrial products.

Recent years have seen a substantial increase in the amount of equipment available in agriculture, and the power consumption of the sector has more than doubled over the last decade. This period has meant an increase in the power-to-worker ratio in industry, too. As a result, the gap between these sectors in terms of this ratio has remained unchanged. One worker in industry is supplied with twice the amount of power capacity as one worker in agriculture.

For agriculture to be brought up to the level of industry in this respect, its fixed assets must be almost doubled, which would entail a rise in labour productivity and thus increase agricultural output.

Having decided that agriculture must be supplied with more equipment and machinery, it can be established how many and which machines industry must produce for this sector. Agriculture's need for industrial goods is not confined to this, of course. The intensification of agriculture is attended by the broad-scale introduction of chemical fertilisers, large-scale land improvement work, anti-erosion measures, and so on.

Summing up all agriculture's requirements, it can be decided by how much each industry must increase in capacity in order to double the level of industrialisation of agriculture.

The tremendous tasks involved in expanding and improving the industrial base for the development of all the Soviet economy's various sectors show how great the economy's requirements are for industrial output, these arising from the need, in particular, for a further industrialisation of construction work. The figures set out above indicate that the assets-to-worker ratio in the building industry must be raised substantially, as an essential condition for an increase in the productivity of labour, the quality of construction, the volume of work carried out



both for industrial projects and for housing. This is why the decisions of the 25th Congress of the CPSU concerning the five-year plan for the development of the national economy of the USSR for 1976 to 1980 envisaged an increase in the building industry's supply with highly productive machinery and means of transport and the expedient replacement of outdated earth-moving equipment and provision of the necessary repair and maintenance base for this sector.

The fulfilment of the five-year plan's main task—of achieving a considerable rise in the Soviet people's standard of living—implies an increase in the output of consumer goods produced by group B industries. These include industrial goods in "pure form", such as household equipment, synthetic fabrics, the output of the fishing industry, as well as items produced by processing agricultural raw materials, such as foodstuffs, woollen, cotton and linen clothing.

The attainment of an accelerated development of group B industries is ensured, as noted above, by a tremendous increase in the quantity of equipment, instruments and materials supplied to agriculture, by the creation of a stable base for the production of the agricultural raw materials required for the light and food industries, as well as substantial capital investment in these branches. All this makes it possible to increase the volume of light and food industry output, thus providing for a rise in the standard of living.

The complexity of the interconnections adds complexity to the elaboration of the plan on the basis of sectoral calculations. Therefore, in drawing up a detailed national economic plan, it is not sufficient simply to assess the development prospects of only the key heavy industries. In the initial stages, the main structural correlations and the growth of the entire national economy must be established for the coming plan period.

The general parameters of the draft plan provide the basis for detailed plan calculations for sectors and branches and individual resources on the territorial and temporal planes. Detailed drafts are drawn up having in mind specific conditions for implementing the plan, thus making it possible to assess not only how feasible they are, but also to reveal additional resources and take account

of the diverse specific conditions during the subsequent tying together of the partial calculations into a single plan.

The procedure for drawing up the comprehensive plan, from general indicators to detailed and specific ones, and then to adjustment of the general indicators on the basis of these, allows planners to avoid lop-sidedness. Such a planning procedure reflects the increased scale of socialist property and is conditioned by the high degree of interdependence between all parts of the economy. It presumes that the chief interconnected contours of the plan are calculated using macro-economic models and balances, while the sectoral and regional parts are drawn up using sectoral and territorial models.

On the basis of macro-economic models, comprehensive planning above all determines the rise in the volume of the gross product, the national income, the final product and their use for meeting productive and non-productive consumption needs, for accumulation in order to increase productive capacity and improve the standard of living and for the development of the individual member of society. The establishment of a rational correlation in the plan period between accumulation and consumption is the most complex and the most important task in this synthesising procedure.

The annual volume of the national income or the final product is the summary indicator of economic development. In the Soviet Union and the other socialist countries, only material production is regarded as a source of the national income or the final product.

The plan calculations of the rates of economic development are based both on ascertaining the influence of each factor of extended reproduction and on analysing their joint influence, so that three specific methods are combined:

- determination of the dynamics in the national income on the basis of changes in the numbers employed in material production and the growth in their labour productivity;

- calculation of the rates of growth of social production on the basis of the increase in fixed productive assets, productive investment and the rise in their efficiency;

—determination of the national income on the basis of the increase in total outlays—assets and living labour, and changes in their combined efficiency.

The first two methods essentially represent a single-factor approach and are formulated into a single-factor model (labour inputs for the first and fixed productive assets for the second), while the third method is a multi-factor one, with a corresponding multifactor model.

The calculations by the various methods are carried out in parallel; they intertwine with and specify one another. The calculations inevitably involve extrapolation and temporary hypotheses that are later specified or rejected. One and the same indicator is determined at different stages from different angles: from that of the need to ensure a given level of some particular indicator and that of the economic possibilities for doing so. As a result of a gradual approximation, resources and requirements are coordinated.

Detailed macro-economic models in the form of various modifications of the intersectoral balance make possible the transition from summary indicators to sectoral forecasts. The amount of detail in the sectoral calculations depends on how aggregated the multisectoral macro-economic models are.

The plan calculations of the volume and structure of production using intersectoral models are based on three elements. The first includes macro-economic indicators, obtained from synthetic calculations, that act as the general control characteristics for subsequent detailed calculations. The second includes indicators of the dynamics of society's final requirements in the form of indicators of the final product. The third element is a group of indicators of the technical and economic structure of production. This takes the form of coefficients for the inputs of raw and other materials, fuel, assets and labour per unit of output.

The general form of the intersectoral model used in forecasting and planning work is described by the following type of equation:

$$X_i(t) = \sum_{j=1}^n a_{ij}(t) X_j(t) + \sum_{j=1}^n \sum_{r=1}^T b_{ij}(t) k_{ij}^r \times \\ \times \Delta X_j(t+r) + Y_i^*(t), \\ i = 1, 2, \dots, n; \quad t = 1, 2, \dots, T,$$

where  $X_i(t)$ —is the volume of output of sector  $i$  in the year  $t$  of the plan period;

$a_{ij}$ —is the coefficient of direct expenditure of the output of the sector  $i$  per unit of the gross product of sector  $j$ ;

$b_{ij}(t)$ —is the specific capital expenditure of the output of sector  $i$  on the increase in a unit of output of sector  $j$ ;

$r$ —is the maximum capital investment lag (the period from the beginning of the investment to the receipt of output engendered by it);

$k_{ij}^r$ —is the share of capital investment of the output of sector  $i$  for increasing the output of sector  $j$ ,  $r$  years before the completion of construction, in the overall volume of capital investment of the output of sector  $i$  for the increase in the output of sector  $j$ ;

$Y_i^*(t)$ —is the final product of sector  $i$  in the year  $t$ , minus productive capital investment connected with the expansion of production (this model also includes calculations to determine the additional need for manpower of various skills).

There are already sufficient data available in the USSR for individual elements of the general dynamic model of the intersectoral balance of production and distribution of output in the economy, as described above.

Between 1963 and 1965, Soviet sectoral research and design institutes created the world's first set of coefficients of direct expenditures of objects of labour, the assets-to-worker ratio and the capital intensity of output. In these, the results are accumulated of the technical and economic calculations carried out by sectoral institutes on the development of technology and production techniques and production organisation in the near future. The standard basis of the intersectoral balance embodied the main trends in technological progress, progressive shifts in the structure of raw and other materials, fuel and energy consumed, the main directions in the improvement of the production apparatus of the national economy. The creation



of this basis made it possible to carry out variant calculations for the balance of the production and distribution of output for 1970. In 1967-68, a number of variants of the intersectoral balance up to 1975 were worked out. Further work in this direction not only allowed standard indicators to be elaborated for 1980-85 and major amendments made to the structure of intersectoral models, but also these models to be moulded into an instrument for continuous forecasting at the pre-plan research stage. In the initial stages, an aggregate dynamic model of the balance was used to determine the possible rates and proportions of the economy's growth over the next five years, but in subsequent stages, increasingly wide use is made of a model of the physical and value balance, which is used for other purposes and not only to make experimental calculations. The model of the physical-value balance makes it possible to tie in the calculations of macro-economic indicators and intersectoral proportions with ones characterising the specific intersectoral and key intrasectoral interconnections. In its structure, this model is now the closest to national economic planning practice, as is determined by the range covered by the balance, including the list of key sectors (run by the most important ministries), as well as specific types of product. Calculations of the physical-value balance in general were made for the five-year period for 25 industrial ministries on the levels of 30 sectors and 260 types of industrial and agricultural product. For the long term, such calculations were made for a more aggregated list of 130 items. It should be noted that this model envisages a transition from the organisational-departmental aspects of planning (which virtually coincides with planning of the indicators for economic sectors) to planning by so-called pure sectors, embracing the output of a specific product throughout the national economy. All this provides a single estimate of the interconnected volumes of the gross and commercial output of sectors and the volumes of production and use of the key types of resource in physical terms.

The principles for constructing the physical-value model, which are designed to make the plan calculations in physical and value indicators correspond to practice, determine the specifics of the physical-value intersectoral balance model. The equations of the physical-value balance

for the production and distribution of output have the following form:

$$x_i = \sum_{j=1}^n a_{ij}x_j + \sum_{k=1}^m a_{ik}x_k + y_i + \alpha_i x_i,$$

$$x_j^k = \beta_j^k x_j; \quad \sum_{k=1}^m \beta_j^k = 1;$$

$$x_k = \frac{\sum_{j=1}^{n \in k} x_j^k v_j^k p_j^k}{1 - \gamma_k},$$

where  $x_j$  — is the volume of produced ( $j$ ) and distributed ( $i$ ) product, respectively, in physical terms, for the full national economic circuit,  $i, j = 1, 2, 3, \dots, n$ ;

$x_j^k$  — is the volume of output of product  $j$  in the enterprises of sector  $k$ ;

$x_k$  — is the volume of the gross product of sector  $k$ ;

$a_{ij}$  — is the expenditure of product  $i$  on the production of a unit of output  $j$  for the entire national economic circuit;

$a_{ik}$  — is the expenditure of product  $i$ , not specified for individual products, per unit of the gross product of sector  $k$ ;

$\alpha_i$  — is the share of the part of distributed product  $i$ , not broken down for specific consumers;

$y_i$  — is the value of the final consumption of product  $i$ ;

$\beta_j^k$  — is the share of the enterprises of sector  $k$  in the volume of output of product  $j$  for the full national economic circuit;

$v_j^k$  — is the share of the commercial output of product  $j$  in the overall volume of its production in the enterprises of sector  $k$ ;

$p_j^k$  — is the wholesale price of product  $j$ , produced in the enterprises of sector  $k$ ;

$\gamma_k$  — is the share of other output included in the volume of the gross product of sector  $k$ ;

$n, m$ —are the respective quantities of products and numbers of sectors included in the physical-value intersectoral balance.

The indicators obtained from solving the system of equations of the physical-value model make it possible to establish the balanced volumes of the production, distribution and use of the output of sectors in value terms and of the key types of product in physical terms. They also allow planners to determine and assess quantitatively the scales of and trends in the main intersectoral links in the national economy. The fact that the model includes equations describing the use of investment resources, fixed assets and manpower substantially expands the possibilities for its application.

Comprehensive planning of the volume and sectoral structure of social production by applying the intersectoral method is based on calculations of the key factors determining shifts in intersectoral proportions, of changes in the volume and structure of society's requirements and of the trends in technological progress.

The elaboration of the plan intersectoral balance involves drawing up the principles of the production programme for all major sectors of production, this constituting the framework of the plan and serving as a reference point for detailed calculations on the sectoral and regional plane. The more points are contained in the intersectoral balance, the more detailed will be the indicators obtained for this comprehensive production programme for the national economy, which can be determined as control figures for sectors.

The efficiency of using intersectoral models in comprehensive planning is conditioned by the possibility of obtaining several solutions. This is because different variants can be calculated for the structure of the final product and different variants assessed, for the development of the sector's production techniques. The latter might be expressed as technological coefficients of current and capital outlays in the intersectoral models.

A combination of the different variants of the two groups of indicators increases the number of possible solutions and allows the best of them to be chosen. It then becomes possible to establish not only the interconnection

between the final requirements of society and the structure and volumes of production, but also to calculate the influence exerted by technological progress on the development prospects for production and consumption. This last factor can only be taken into full account in comprehensive planning, if the plan is drawn up in detail for each sector and region.

Sectoral drafts based on multisectoral, macro-economic calculations make it possible to get round the limited, local approach to assessing the efficiency of the sector's development. At the same time, this expands the opportunities for independently elaborating the plan within each sector and region. Such a scheme for comprehensive planning is applied even at the lowest level—the enterprise, which can estimate the demand for its output, determine the possible inflow of resources and investment for fulfilling the production programme, all on the basis of detailed sectoral drafts.

All these factors explain the attention focussed in the USSR during the ninth and tenth five-year plan periods on improving intersectoral planning. Intersectoral models (aggregate dynamic models) have become the central feature now developed by the automated planning systems (APS) of USSR Gosplan and the state planning bodies of the Union republics. These models are used to ensure the interaction of all the summary and sectoral subsystems of the APS. Within the "Master National Economic Plan" subsystem, not only are the conditions determined for the functioning of the models in their interconnection with the models of the other APS subsystems, but also the information flows are described specifying interconnections of input and output data.

Comprehensive planning greatly increases the number of plan variants considered and makes them more balanced, but cannot yet solve the final problems of optimal economic development.

In accordance with the key provisions of optimal planning, the national economy must develop with the most beneficial proportions and the greatest efficiency. Meanwhile, the indicators of efficiency at all levels must correspond as closely as possible to the single national economic optimality criterion and provide for the selection of the best development course for the economy. The specific



ways of co-ordinating local decisions with the goals of national economic development must take account of the limited natural, production and labour resources and scientific and technological knowledge. This work must be carried out within the framework of a single centralised hierarchical management system with precisely defined decision-making levels.

One extremely difficult task to be carried out is to take combined account for the entire national economy of such demands as the fulfilment of the key development tasks in the form of clearly defined goal functions, the inclusion of all the diverse possible ways of attaining the set goal through a variety of economic and technical options, as well as consideration of all the main limitations on renewable and non-renewable resources.

The elaboration of optimal planning methods has, in practice, developed into the construction of a multistage set of models for optimising the long-term national economic plan. This set is based, at the moment, on the models of the intersectoral balance that are already in use and modifications of it in the form of models for intersectoral optimisation, for optimising the development and location of production, for optimising intersectoral complexes and sectors, for foreign trade and the structure of consumer demand.

The set of mathematical economic optimal planning models also includes ones designed for solving local production problems, finding the most profitable direction of freight flows, making rational use of the machine-tool pool, fuel and raw materials. Such models cannot, however, be called elements of optimisation of the national economic plan.

At each level and stage in optimal planning, depending on the degree of aggregation, a specific description of social requirements and specific resource indicators are used. Only modern automated systems for information collection and mathematical simulation of economic processes by computer are capable of elaborating optimal programmes. The Tenth Five-Year Plan (1976-80) envisaged the widespread application of mathematical economic methods, the use of computers, office equipment and means of communications. This provided the material base for practical implementation of optimal planning.

The stages in the development of Soviet planning considered above far from reflect all the complexity of the historical course followed by the country in this sphere. The development of each individual country involves specific features that influence the formation of planning and the efficiency with which it is applied. In analysing the experience of planning in the USSR, it is important to note its dialectical nature and the use of methods corresponding to the socio-economic tasks and possibilities of the national economy.

#### **Stages and Methods in the Elaboration of Macro-Economic Programmes in the Capitalist Countries**

The interaction between a number of factors relating to the goals, the content and the methods of programming exerts a substantial influence on the elaboration of economic development programmes. The specifics of historical development, the political situation and the organisation of the economic services in a particular state must also be taken into account. Even so, it is the goals and the type of programming that are the most important among the multitude of factors deciding the logic applied in economic programming.

There are three basic types of economic programming practised in the capitalist countries: anti-cyclical, partial structural, and structural. In Sweden and Norway the planning is mainly anti-cyclical; in Holland it is partial structural, and in France and Japan—structural planning is typical.

The time horizon of economic forecasts and programmes depends on the type of programming.

Short-term programming, usually based on the anti-cyclical approach, is designed to achieve an overall economic equilibrium and an active balance of payments. For this purpose, traditional, general methods of tax and financial policy are used. Even so, account must be taken, first, of the fact that the "plans" might reflect detailed proposals mainly concerning the probable demand for output in various economic sectors; second, that the countries

taking this approach do not automatically have to reject selective tax and credit measures. Such measures are not usually included in the "plan", though they were initially employed in accordance with specific criteria for removing obstacles to the "smooth functioning of the economy" or for attaining specific partial goals. There now exists a complex array of state policy instruments that, in some way or other, are used as elements of the programme and analysed within the framework of econometric models for compiling short-term programmes.

The form of partial structural programming developed by Dutch economists is also used for short-term goals. It is a derivative of state budget policy. The economic programme in this case is regarded as a method for determining the policy with respect to the key sectors of the economy and serves primarily the goals of maintaining a high level of economic activity. The Dutch economists believe that partial structural programming is also applicable for medium-term "planning". This approach undergoes changes as the time horizon of the programme extends and evolves into structural programming.

The provision of economic growth in the long term is envisaged in structural programming. This arose in France in connection with the plans for postwar reconstruction and is geared to attaining the structural changes, defined in advance, without which long-term economic growth would be impossible. Such changes, so the supporters of this sort of programming believe, cannot occur simply on the basis of the free interplay of market forces, so structural programming is required. Here the role of the state in controlling the market mechanism increases. It is supposed that structural changes in production and the evolution of the key quantitative correlations in the economy can be achieved with the help of new capital investment. Selective political measures used to accomplish these changes cannot always, in practice, be determined quantitatively within the framework of the sectoral models used in drawing up short- and medium-term "plans". At present, alongside structural programming, anti-cyclical programming is developing in France. At the same time, in some countries programming is evolved from the anti-cyclical to the structural, from the current to the medium-term. In recent years, steps have been taken towards long-

term programming. Long-term draft "plans" outlining future state policy have been drawn up in France for the period up to 1985, in Austria up to 1980, in Holland up to the year 2000, in Sweden up to 1980, in Norway up to 1990, and in Japan up to 1980. These long-term programmes are usually experimental ones. Britain has also done limited research (forecasts of public spending in connection with the expected growth in 1980/81), as has Austria (a "plan" for the development of education and the economy up to 1980) and Sweden (a forecast of manpower use for 1960 to 1980, as well as of the development of transport and energy supplies up to 1985). In the USA, the Hudson Institute has drawn up long-term forecasts up to the year 2000 and the White House Conference has elaborated the prospects for US economic development up to 1990.

On the basis of estimates of possible long-term development, medium-term programmes are prepared and state economic policy decided. Thus, in France the forecasts for 1960 to 1985 played a part in the elaboration of the 1965-1970 five-year plan. In this, the following problems arising from economic development were considered: quantitative estimates for 1985, the influence of ecology, management of the production apparatus, trends in urban growth, the structure of future consumption and the way of life, transport, scientific research, education, agriculture, the dynamics of the growth of state finances, and so on. During the preparation of the sixth five-year plan for 1971-75, account was taken of the changes that might result from the scientific and technological revolution in many spheres of the production of goods and services over the next twenty years; the influence of the world market on the development of the industrial sector was assessed, including the impact of changes in technology, industry, and the economy as a whole on the quality of labour and the mobility of manpower, as well as estimates of the expenditure on the relocation of manpower. Factors that influence the way of life were studied, as were different possible variants of the content and form of this way of life, including such elements as the structure of consumption, possible uses of time and forms of social ties.

One piece of research on the prospects for the development of individual economic sectors carried out in Brit-



ain considered the main goals requiring public expenditures, i.e., education, public health, road building, housing, social transfers, as well as investment in nationalised sectors. Since the problems studied can only be resolved given certain quantitative estimates of GNP growth and a description of its distribution for final use, including the volume of private investment and the foreign trade balance, this partial research required a transition to broad macro-economic investigations. Long-term calculations, regardless of their experimental nature, pursue specific goals. In Italy, Norway, and Japan, such calculations help in the preparation of medium- and short-term state plans and programmes. In Austria, Britain, France, Italy, Holland, Norway, Sweden, and Japan, certain legislative measures for regulating the economy have been elaborated on the basis of estimates of future development. The main task involved in this work in Austria, Italy, Holland, and Sweden has been to define recommendations for private companies concerning economic policy. Finally, such research is also of academic interest.

Thus, there is an interconnection between the calculations and programmes made for different time horizons. Depending on the nature of the programming in a particular country, long-term calculations constitute, as it were, the pivot for medium- and short-term development programmes. In anti-cyclical programming, the parameters of long-term research are used to resolve short-term problems. Structural programming is based on many characteristics of long-term forecasts, since its purpose is to create new development conditions.

Long-term drafts are regarded by state economic organisations as major documents, though they do not always receive official state approval. Even in the USA the importance of long-term forecasts and draft plans for developing state policy is recognised, in spite of the fact that the country has no official doctrine or official economic programming bodies. This is evidenced by the statement made by R. Miller, executive director of the White House Conference on the Development of the Economy of the USA up to 1990, concerning the possibility of quantitative forecasting of economic development and the economic growth figures that might serve as a basis for planning future social development.

In the capitalist countries that practise state programming, no consistent dependence can be established between long-term forecasts and drafts, and medium-term programmes and short-term "plans", like that existing between the long-term, five-year and annual plans in the socialist countries.

At present, owing to the interweaving of the forms of anti-cyclical and structural programming, the view that programmes should be built on a pyramidal time basis is gaining increasing recognition: long-term forecasts and drafts provide the basis for drawing up medium-term programmes, on which, in turn, short-term ones are based. Yet, since there are substantial differences between anti-cyclical and structural programming and since their targets are diametrically opposed, implementation of this idea has produced no precise formalisation of the interconnections between the three time forms of drafts and programmes.

In spite of the specifics of the economic development in individual countries and the differences in the forms of programming, the latter can be divided into three main stages:

- the collection of preliminary information on the processes taking place in the economy, in individual sectors and on individual markets;
- the choice of programme goals (short-, medium- or long-term);
- transformation of all the collected and processed information into a co-ordinated development project.

It must be remembered here that, in the initial period of its development, programming was greatly influenced by statistical concepts and was based on national accounts and Keynesian theories that, together with contemporary methods of market analysis, later developed into macro-economic models. This was stated by the Dutch economist Jan Tinbergen, and it reveals not only the theoretical, but also the informational basis of programming, which is built on two supports—national accounts and direct surveys of firms.

The task undertaken by the compilers of national accounts is to establish the formal correspondences in the economy. The interest shown in these by bourgeois economists is not accidental. In the capitalist economy, the state can influence social reproduction only indirectly, mainly by affecting the formation and distribution of incomes through financial,

credit and monetary policies. The development of national accounts allows the correlation to be revealed between production and consumption, accumulation and consumption, the input-output ratio in production, the share of the country's foreign trade turnover, the share and forms of capital investment in the various spheres of the economy, the sources of this investment, the exchange between the individual sectors of the economy, including intersectoral links, and other factors affecting the dynamics and structure of social production.

The exchange concept lies at the base of the compilation of national accounts. Accordingly, all activities are considered as productive, if their result is realised on the market. Production is thus interpreted very broadly and is inflated by the inclusion of various non-productive services. In the French national accounts, production includes the possession of real estate and housing, health establishments, cultural and entertainment premises, as well as the services of legal offices and private educational institutions. This results in an inexact definition of the characteristics and values of all categories connected with production (the social product, the national income) and, consequently, in a distortion of the true picture of economic interconnections.

Recently, individual capitalist countries have been attempting to co-ordinate their national accounts with input-output tables in order to improve the analytical and practical application of national accounts as an instrument of economic analysis and programming. Such a co-ordination allows more detail to be introduced into individual elements of the national accounts and, at the same time, the information contained in them to be used to expand the quadrants of the table of intersectoral ties. This creates the necessary conditions for co-ordinating the key summary synthetic indicators with the specific economic parameters of individual sectors. The table of intersectoral ties, reflecting the material structure of the economy, can in a sense be regarded as a further development and improvement of national accounts.

In contrast to national accounts and tables of intersectoral ties, providing systematised and to some extent controlled economic information for the building of economic programming models, other forms of information are extremely arbitrary. As a rule, the programme is based on two types

of information—national accounts and surveys, as well as other requests for economic data. The latter cannot, however, be considered complete or reliable. State bodies ask firms for data on their output, material outlays, investment, employment, and so on. This is essentially a formal demand, for in the capitalist economy the nature of the information supplied depends completely on the entrepreneur. Thus, the process of sectoral calculations is restricted to those indicators that the sector considers the main ones. Many sectors, especially those in which small and medium-size enterprises predominate, do not figure in the investigation at all. Difficulties in consultations with firms are inevitable. In sectors consisting of a large number of small firms, it is hard to find any big enterprises to consult with. Yet, even on the level of the largest enterprises and leading sectors of industry, the research and consultation procedure encounters certain difficulties. Entrepreneurs reap no benefit from spending their time and that of their employees, which costs money, on making any serious effort to prepare information on the firm's intentions, and they prefer to keep information on the affairs of their enterprises secret than to make it available to competitors. The profit motive works against the provision of information.

On the basis of the economic data collected from various sources by the central government services, first the state of the economy is assessed and the key tasks determined for the development programme and, second, econometric models are elaborated for programming purposes.

In the initial programming stages, an overall picture of the future state of the economy is drawn by extrapolating the constant characteristics of its interconnections. The data obtained are compared with the set of chosen goals for economic growth and the desired structural changes, in order to decide whether these goals are feasible. Then econometric methods are used for determining the overall trend in the state's economic policy. These methods are employed in drawing up short-term programmes for maintaining the level of business activity and medium-term ones envisaging structural changes in the economy.

The preliminary forecasting, choice of goals and policy variants involve the continuous assessment of the interdependence between the main endogenous (incomes, production, expenditure coefficients, investment) and exogenous



values (population growth, the development of world trade, the income and price levels in other countries). It is no easy matter to break down these values in this way, and often variables dependent on internal factors are taken as exogenous. Moreover, the nature of a particular value is affected by the time horizon of the plan. In short-term programming, for instance, planners can get by without taking account of the close connection between public spending and the economic and social factors that determine it—population growth, the need for investment, the infrastructure, and so on, while this is impossible in long-term programmes.

In programming economic development, it is primarily variables connected directly with the so-called general welfare that are considered (i.e., target variables—the level and growth of the GNP, employment, the balance of payments, and the price level), as well as those that can be controlled directly, so the choice of economic policy is often determined according to estimates of the quantitative influence exerted by instrumental variables on these targets. The different policy variants are evaluated, and then the one most suited to the attainment of these goals selected.

The influence of instrumental variables on the goals and the quantitative assessment of this influence can be determined using macro-economic models based on summary parameters. Proceeding from the thesis concerning the turnover and inseparable link between the parts of social production, these equations are combined into a system and then transformed. The quality of the model's parameters is tested from both the statistical angle (the formal reliability of the parameters) and that of their economic content (their economic meaning). Then the models are used for forecasting and making quantitative assessments of economic decision-making.

The endogenous values (assuming the current policy remains unchanged) are forecast by substitution in the equations of exogenous variables. The values of the controlled exogenous variables are taken from decisions that have already been made. Exogenous variables for the economies of other countries or for other economic factors are estimated by experts.

There is another, broader approach to describing economic policy. This is the so-called "method of flexible targets", under which quantitative goals are replaced by various defi-

nitions of the economic policy tasks. The goal is not expressed precisely, since the main thing is to find the maximum preferential index, which is the mean weighted value of several target variables. Let us assume that, in the long-term programme, the policy goals are the per capita consumption level and the growth rate of investment, or reduction in the balance-of-payments deficit and the employment level. These goals are not set quantitatively; the function of these variables is derived and its extreme value sought, taking account of the constraints on all the corresponding variables. It is difficult to calculate this coefficient, especially when a general complex of economic reproduction problems is being assessed. A multitude of goals are considered in this: attainment of an equilibrium of the balance of payments, maintenance of an acceptable number of the unemployed, stabilisation of the price level, wages, an increase in investment.

Substantial problems are encountered in applying the method of flexible targets in aggregate macro-economic models, as bourgeois economists themselves admit. If the analysis goes beyond the bounds of the macro-economic variables, the use of this method takes place during a transition from the second to the third stage in programming, since it is at the third stage that specific problems of economic sectors or branches of industry are considered in their interconnection, with the internal and external markets, etc., taken into account.

The two stages in programme compilation outlined above are carried out mainly by central government bodies. In France, the work on the initial variant (or, in the French terminology, the "zero-variant") begins three years before the start of the plan period. The General Commissariat for Planning estimates the volume of production and investment, as well as employment in the sectors of the economy, considers the possibilities for developing foreign trade, traces the probable dynamics and structure of personal consumption. In Britain, the National Economic Development Council determines a series of macro-economic indicators (assuming that the annual GNP growth rate is 4 per cent), including such elements of the final product as personal consumption, investment, exports, public spending on national needs, and so on. Since the British manufacturing industry is based on imported raw materials, the need for imports is

also calculated. On the basis of demographic forecasts, the possible indicators are estimated for the growth of labour productivity, conditioned by the established rate of growth and limitations on employment. Roughly the same procedure is followed in Holland, Belgium, and other countries.

The most complex stage in programming is the third one, which begins with the initial (zero) draft being sent to various ministries, banks and other state organisations and, sometimes, to major companies, the leaders of political parties and trade unions. After this, the centralised and decentralised programming spheres begin to interact. The first of these accumulates and co-ordinates individual drafts prepared by government organisations in reply to the preliminary outlines of the programme drawn up by the government planning services. The proposals of ministries are taken into account and the result eventually formulated as a description of the production of goods and services in the form of an intersectoral balance for the plan period. While the sphere of centralised work is conditioned, to some extent, by restrictive characteristics and tied to technical processes and economic interdependences, the decentralised one is connected with the interests of non-state economic units, political parties and organisations, and is geared to "co-ordinating" the various private interests of competing monopoly groups, and to attempts to "attain" a class compromise.

Thus, capitalist programming has been confronted with a difficult task—that of co-ordinating not only the interaction of multiple economic sectors in the development programme, but also the interests of competing groups. Moreover, the work at this stage is arranged in such a way as to filter the opinions of progressive organisations and trade unions through the mesh of the state economic services and to find justification for ignoring most of the demands and wishes of such organisations. In this the class character of programming in the capitalist countries is manifested.

Owing to the lack of correspondence between the interests of those taking part in drawing up the programmes, this work drags out into a protracted co-ordination of the key indicators. It is under "planning by co-ordination",<sup>1</sup> as some

<sup>1</sup> By using this term, bourgeois economists underline the specific nature of the work involved in drawing up the indicative plan which, in their opinion, is the result of the collective efforts of representatives of society's main social forces: entrepreneurs,

bourgeois economists call it, that the full incompatibility becomes clear between the viewpoints of people representing different, and sometimes hostile groups, any compromise between them always being enforced and short-lived.

Western economists include many critics who believe that the programming "data contained in such plans—from the overall size of the GNP down to individual goods and services—must be regarded as the result of various compromises worked out between persons collaborating in drawing up the plan.... All those who feel they have been prejudiced are, based on past experience, inclined to seize every opportunity to compensate themselves by other means and this must in every case lead to non-fulfilment of the plan."<sup>1</sup>

It is the difficulties encountered in drawing up a detailed co-ordinate programme, rather than the desire to attain a high level of economic equilibrium, that gave rise to multiple iteration in the programming procedure.

The programme adopted after the many debates cannot be called final. Pressure from ruling parties and the government influences the choice of the final variant of the programme. The illusory democratic nature of the procedure is obvious. For instance, the fifth French "plan", discussed in parliament in September 1964 as the "Rapport sur les principales options", was developed further in various sectoral and problem commissions that considered both the nature of the discussion in parliament and the government's stipulations.

*The development of methods for macro-economic programming.* Changes in methods used for economic development programming are conditioned by the transition from anti-cyclical to partial structural medium-term programming, and then to the medium- and long-term structural programming.

The historical and logical substantiation of the government programme for economic development began with the determination of macro-economic indicators. In the initial stages of state economic regulation, the instruments used for

working people and the state. Such a description of capitalist programming is based on the widespread theory of "social partnership".

<sup>1</sup> *Intereconomics*. Monthly Review of International Trade and Development (Hamburg), No. 10, October 1966, p. 21.



assessing government actions, which were regarded as temporary measures geared to restoring the disturbed balance in the economy, included various models of overall and partial market equilibrium. The reason for this was that the state itself was considered as a source of additional demand.

Owing to the random nature of the reproduction process under capitalism, the search for levers for exerting a practical influence on economic development through regulation of purely market relations produced no results. It is extremely difficult to find an instrument for regulating the processes of production in the exchange sphere. Even so, recent works by bourgeois econometricians have positively appraised such propositions as division of the national economy into production and consumption units, isolation of price from the commodity in physical terms, introduction of constant production functions in the form of expenditure coefficients, isolation of means of production and consumer goods from among the entire mass of products.

Since the models of global and partial equilibrium did not produce the desired results, bourgeois economists stepped up their search for ways to "improve" the capitalist economic system by influencing the summary indicators through so-called aggregate macro-analysis and the elaboration of single- and two-sector macro-economic growth models, as well as factorial analysis and production functions. In contrast to research into the global equilibrium, the development of macro-economic analysis was provided with a solid statistical base.

In analysis of macro-economic systems by the maximum possible aggregation of economic totalities, the number of factors (serving as the variables of the model) decreases. This virtually eliminates the problem of determining the price equilibrium since, in a very aggregate model, there is no longer any precise dependence between prices and the volume of production. The summary characteristics of the reproduction process and the interconnection between the most general parameters of the national economy are analysed. In national income models, some indicators are put forward as the argument and the others as its function. For instance, Keynes' national income model divides into two parts: consumption and savings ( $Y=C+S$ ). In practice, savings are equated to investment which might be an independent variable and, through the Multiplier, affect the national income.

These models are only of interest as preconditions for the development of programming methods. It is worth noting that some of their variables are considered as autonomous elements, while others are stimulated ones. Excessive aggregation substantially reduces the possibility of analysing the specific nature of capitalist reproduction. Thus, the incomes of opposing classes are brought together in a single summary indicator. In reality, the functional purposes of the incomes of the working people and of the capitalists differ, and their movements are antagonistic.

When the indicators are greatly aggregated, the principles according to which they are combined play a fundamental role. A summary indicator will be unstable if it is made up of ones with different functional features, and the data obtained from it will give an imprecise idea of the economy's development. In analysis of the growth problems, not only the combination principles are of significance, but also a correct estimation of the bounds within which aggregate models can be applied. The compilers of the first development programmes generally confined themselves to using aggregate macro-models for determining strategic variables. Later, such indicators began to be used as limits for the calculation of subsequent, more detailed parameters.

In assessing the global characteristics of development, two fundamental approaches, as already mentioned, can be pinpointed that correspond to the essence of the capitalist economy. The first approach consists in estimating the possible volume of the production of goods and services on the basis of available primary production resources. In other words, the supply of goods and services offered by producers is evaluated assuming the possible utilisation of existing and prospective resources. The second approach to determining strategic characteristics is to evaluate the prospects for development from an estimate of changes in the elements of overall demand.

The method of expert estimates and simulation, combining the two approaches described, constitutes the set of instruments for calculating indicators. The nature of the tasks confronting programming organisations, the available economic information, and the qualifications and experience of the staff of the special programming bodies decide which models are to be used. Accumulated knowledge and experience allow individual programming bodies to apply more complex mod-

els, but even then many key parameters are simply estimated by experts. This involves major drawbacks. Expert estimates are based on the intuition and experience of the expert, i.e., on both objective knowledge and subjective understanding. The latter cannot be quantified. The extent to which it corresponds to actual trends is not determined. Moreover, new trends in the development of production techniques are only included in aggregate estimates after a considerable delay. They are felt more on the intermediate economic levels, but offset one another on the higher level. Analyses of global indicators do not always take account of this fact, so the expert gets the impression of a sort of stationary state that does not correspond to actual processes.

The compilation of programmes differs from forecasting by the fact that models are used even in the initial stages, models in which the nature of the impact of instrumental variables is assessed. Varieties of the Harrod and Domar models are used to investigate the first approximate determination of future growth:

$$Y_t = Y_0 \left( 1 + \frac{a}{k} \right)^t,$$

where  $Y_t$ —is the volume of the national income in the forecast period;

$Y_0$ —is the volume of the national income in the base period;

$a$ —is the accumulation rate;

$k$ —is the capital coefficient (the "capital-output" ratio).

Calculations of the value of the national income and the rates of economic growth through the accumulation rate and investment efficiency, in their simplest form, do not reflect the actual interconnections that exercise a substantial influence on the development process. Such important conditions for the use of investment as the effect of the lag in investment returns, depreciation, the possibility of selecting capital-intensive (labour-saving) or labour-intensive (capital-saving) development variants, etc., are not taken into account.

At the stage of macro-economic calculations, the investigations cover mainly the permissible limits to the increase or decrease in the share of accumulation, given various scales of autonomous investment and considering analysis of

the possible government policy with respect to investment. First, the sphere of possible solutions with respect to the share of accumulation is analysed. These are limited, on the one hand, by the minimum permissible growth rate of consumption, and by the maximum possible increase in the accumulation fund, real means of production resources and their potential growth, on the other. It is in the initial stage that the possible change in the efficiency of investment is assessed by analysing technological progress as a development factor. The quantitative measure of such changes is obtained beyond the bounds of the simplest single-sector models.

At the first stage in programming, attempts were made to make the models more complex. For instance, the amount of depreciation, which in some countries is significant, is taken into account using indicators of the amount of depreciation rates of the fixed capital and the share of equipment replacement. Different variants are used to calculate the investment lag. At this stage, this problem is just as important as the problem of assessing the influence exerted on development by such factors as labour and technological progress. The impact of the indicators of labour and technological progress is determined using the Cobb-Douglas production function, which takes the following general form:

$$V = (1 + e)^t a^\lambda k^\mu,$$

where  $V$ —is the volume of production;

$a$ —is the number of workers or quantity of labour used;

$k$ —is the capital used;

$e$ —is the mean annual growth in efficiency.

The parameters of development with changing correlations between the amount of labour and capital used and the level of technology are analysed using macro-economic calculations and applying a production function.

These parameters are employed to ascertain various correlations between the demand for factors of production—labour and capital—and their prices, in accordance with the characteristics of their marginal productivity. In such models, individual parameters are determined differently. Thus, the supply of capital depends on both the overall amount of capital available and the returns per unit of capital. In turn,



the influence exercised by labour and capital on the economic growth rates depends on the growth rates of wages and incomes, and the limits of these resources. Such calculations help in assessing the degree of influence exerted by changes in the share of accumulation, the growth of efficiency, the population growth and wage rises on employment. Although the limits on resources differ from country to country, the results of experiments with production functions have shown that an acceleration of population growth usually, *ceteris paribus*, accompanies a slower acceleration in the growth rate of production. All this makes it possible to estimate resources from the use angle and to consider, in the first approximation, which instruments of economic policy to apply in the future: measures geared to changing the demographic situation (in the bounds of long-term programmes), regulation of wages and their minimum level, the attraction of new investment and tax regulation applied to both labour and capital, and so on.

One major problem at the given stage in macro-economic calculations is to take account of technical changes in the coming period. Owing to the difficulties involved in forecasting possible technological shifts on such an aggregate level, attempts are made to present it through other parameters—various combinations of capital and labour. For this purpose, the dependencies described by technological feasibility curves are used. For instance, a description of labour productivity, conditioned by the capital-to-worker ratio, is one interpretation of the technological curve. Economists try to use a production function to isolate technological progress as an independent growth factor.

The results of isolating a multitude of individual factors are closer to reality, since this reduces the share of unaccounted for or poorly revealed factors. Yet the disaggregation of parameters makes greater demands on the methods for estimating the input parameters and characteristics.

The essence of another approach, by elements of demand on the general parameters of the development programme, consists in a sectional study of trends in the demand for the key components of total demand. Recently, attempts have been made to take into account the interests not only of individual market agents, but also of the government, which stimulates or restricts the scale of activity, for instance, in the sphere of capital construction.

A combination of time development trends in macro-systems relating to consumer demand as a whole, with stable structural changes in individual demand, predetermines the volume and structure of consumer demand at the given programming stage. Here, the interconnection between the dynamics of incomes, the demand for individual goods and the degree of saturation (level of stocks) of such goods are analysed. The scale of income tax in general, and the tax on personal incomes in particular, not only influences the size of overall consumer demand, but under the selective approach taxation can act as an instrument for controlling consumer demand and its structure, so this and its scale are increasingly regarded not only as functions of incomes from production (through the indicators of the employment and wage levels), but also, to some extent, as functions of the state's economic activities, measured by the volume of financial resources passing through the state budget.

In recent decades, the bourgeois state has been making efforts to affect economic development using multisectoral analysis. The transition to elaborating programmes for a large number of sectors is a result of both the logic of programming itself and the state's need to stimulate or limit the development of the key economic sectors.

Multisectoral analysis has developed from the theoretical stage into a set of applied instruments for capitalist programming. This is engendered by the growing state intervention in specific spheres of economic activity. In a number of instances, the state exercises a direct influence on the development of individual sectors of the national economy, especially industry.

The applied nature of the multisectoral analysis instruments and the creation of a corresponding statistical base has made it possible to apply the "input-output" method for predicting possible fluctuations not only on markets for the commodities produced and purchased by firms, but also on those of all kindred goods. The possibility has emerged for combining partial analysis of supply and demand with overall economic analysis of the business cycle in the near and more distant future. When the public sector of the economy is substantial, there can be no possibility of efficiently running its activities without multisectoral analysis and programming applied to the turnover of resources in the capitalist economy on the detailed sectoral plane.

Multisectoral programmes are built on the basis of models that constitute different developments of Leontief's original model, known as the input-output model. Leontief's work *The Structure of the American Economy 1919-1929*, which came out in 1941, is considered a classic of multisectoral analysis literature. Soviet economists know an earlier work by him: his review of the work done by the USSR Central Statistical Board *The Balance of the National Economy of the USSR for 1923/24*.<sup>1</sup> In this he analyses the first large-scale work by Soviet statisticians. Leontief noted that the new feature distinguishing this balance fundamentally from usual economic and statistical research, such as the American and British censuses, is the fact that it attempted to provide figures not only for production, but also for the distribution of the social product. The aim here was to provide an overall picture of the entire reproduction process in the form of an economic table. The Balance of the National Economy for 1923/24 was a staggered table of intersectoral flows in the national economy with an analogous composition of the subject and predicate.<sup>2</sup>

A number of the provisions of this balance were later used by Leontief in his research into the US economy: 1) the staggered form of the table reflecting the interconnections between sectors in the production process (the compilers of the first Soviet balance called this table a balance sheet of the national economy); 2) the pinpointing of four groups of commodities playing different roles in the reproduction process (implements of production, raw and other materials, fuel and consumer goods). It should be noted that research into investment matrices (virtually included in the Balance of the National Economy of the USSR for 1923/24) began much later than the elaboration of input-output tables; 3) the construction of a table of interconnections in the national economy on the plane of so-called pure sectors (or, as the compilers of the balance called it, the "logical classification principle").

All this prompts the conclusion that Leontief's research was based both on the theoretical constructions of bourgeois econometrics and on the practical calculations made

by Soviet statisticians. He succeeded in making the balance an algebraic interpretation of the interconnections in the national economy, giving it the form of a set of equations. This allowed him to trace more precisely the scale of the influence exerted by changes in individual indicators on the entire system of economic ties. In his initial model, Leontief defined the demand for each sector's output as conditioned by the volume of output of all other sectors. Owing to the highly determinate nature of this model, it produced no interesting results, since the entire system was strictly connected linearly and an increase (or decrease) in one indicator produced a proportional increase (or decrease) in all the others. Yet even in this simplified multisectoral model there were a number of positive factors. Previously, the concept of the national product as a sort of variation in the value of the national income had prevailed in bourgeois theory. In Leontief's model the national product of the country is interpreted as the gross aggregate product, taking account of the turnover of objects of labour (the intermediate product). This made it possible to proceed later to estimating the possibility of the state exerting an influence on the production structure through autonomous indicators. The assumption that prices did not affect the volume of output and the level of the coefficients and that these latter were stable allowed Leontief to isolate the autonomous variables in the system. Another interesting feature is that the original input-output tables for the US economy from 1919 to 1929 presented domestic output in the form of labour input, the way it was done in the 1923/24 Soviet balance.

The fact that it is impossible to exert an influence through any individual, independent elements, owing to the highly determined nature of the closed input-output model, gave rise to the open input-output model. This allowed account to be taken of the specifics of capitalist economic regulation. The state can influence primarily those elements that constitute final demand in the input-output model: investment, consumption, government purchases. Using such built-in regulators, the state influences the scale and structure of each of these elements. Intersectoral flows are much more difficult to control by state policy, since they are predetermined by the extent to which the division of labour is developed and the trends in technological progress in the various econom-

<sup>1</sup> *Planovoye khozyaistvo*, No. 12, 1925, p. 254.

<sup>2</sup> *The Balance of the National Economy of the USSR for 1923/24*, Transactions of the USSR Central Statistical Board, Vol. XIX, Moscow, 1926 (in Russian).



ic sectors. Yet both the input-output model and its multiple variants greatly simplify the actual interconnections in the economy.

The key element of final demand is consumption, which accounts for 75 to 90 per cent of the entire final product. The precise calculation of output volume hinges on the determination of the size and structure of consumption. Two approaches to simulating consumer demand are possible. The first assumes that consumption calculations are predetermined by the data of a more aggregate model of the national economy than the input-output model. As a basis for the calculations, data are taken on the increase in the per capita income  $\frac{Y}{N}$ ; using the elasticity coefficient of demand with respect to income ( $\alpha_i$ ), the demand for specific items ( $c_i$ ) is calculated, given the population size.

The elasticity coefficient is worked out in different ways. For countries with a highly dynamic level of incomes, linear elasticity coefficients are less suitable, since they ignore changes in this coefficient itself. Graded forms of such coefficients correspond better to the actual dependencies between the dynamics of the demand for commodities and those of the income level. The overall size of the demand for a group of commodities can be defined as follows:

$$C_i = c_i \left( \frac{Y}{N} \right)^{\alpha_i} N,$$

where, in addition to the definitions already given,

$Y$ —is the summed consumer income;

$N$ —is the population;

$C_i$ —is the constant element in the description of the consumption of group  $i$  commodities;

$\alpha_i$ —is the indicator of elasticity of demand for commodity  $i$  depending on income.

Another type of consumer demand simulation is an interconnected calculation of the levels of incomes, the volume and structure of consumption within the input-output model. Its purpose is to minimise autonomous demand, which is confined, in the given case, to investment, exports and public spending. The incomes in each of the sectors constitute one element of the expenditure functions (represented by the data in the columns of the input-output table). Given a specific consumption rate for each sector (determined by the marginal propensity to consume cor-

responding to the income level), the overall income used for consumption purposes in all sectors of the economy can be established on the basis of expenditure functions. The consumer demand for individual groups of commodities, which is decided by the income received, can be expressed in the system through the coefficients of elasticity and the employment indicators by sector.

The simplest input-output models were the main instrument used for elaborating the British National Plan for 1970. The British experience of national programming was an example of the practical use of this type of model. Application of the intersectoral method came down to the mutual adjustment and co-ordination of independent estimates of output and material inputs prepared in individual sectors up to 1970. According to the British economists, they could not achieve an ideal sequence in elaborating the plan model of the intersectoral balance. Part of the blame for this was laid on the sectoral services, which did not always keep to the provisions and figures prepared by the central programming body. The lack of any formal scheme for comparing the answers received from the sectors and of methods for converting them into the required parameters also had a detrimental effect.

Since input-output estimates are based almost entirely on extrapolation of past trends in the technological coefficients and elements of final demand, sectors were encouraged to carry out research in order to produce their own estimates.

Improvement of the calculation methods on the basis of the simplified (open) input-output model presupposes a cut in the number of exogenous parameters, above all investment. The main form of such models, which are called dynamic ones, was worked out almost simultaneously by Leontief, Holley, Hawkins, and Georgescu-Roegen, and these are used in practice in capitalist programming. They differ from static input-output models in that they make investment flows (or the increment in fixed assets) a function of changes in the scale of production and, in the final analysis, of the volume and structure of the final product. Dynamic models assume constant capital and current expenditure coefficients. This is a very arbitrary assumption, since the parameters describing the structure of investment distribution are the most mobile of all the model's elements. The structure of the intersectoral distribution of

investment predetermines the trends in technological progress, which must be taken into account in analysing the problems involved in reproduction. This type of multisectoral model casts a doubt on a number of the fundamental provisions accepted originally, notably: the constant technology behind the constant expenditure coefficients, the nature of the technical processes not permitting any substitution or choice. This latter is often formulated as the condition that each sector in the input-output model specialises in the production of only one type of output and each individual type of output is produced by only one sector. In the transition to models that better reflect the real economic processes such constraints are removed. Thus, in a differentiated consideration of the ways of making investment, the assumptions noted lose their significance. The traditional precondition of input-output models, that one factor of production—manpower—is limited, also disappears. Since solution of the system of differential equations presumes the presence of all the initial conditions, and not only the structural coefficients  $a_{ij}$  and  $b_{ij}$ , limits are set on all types of productive resources in the model. All this testifies that there is a wide gap between the initial assumptions of the static and dynamic models. The introduction of new conditions into dynamic models with a large number of sectors necessitates application of a more complex mathematical apparatus.

The use of dynamic multisectoral models in elaborating national economic development programmes in the capitalist countries has shown the limited nature of constructions of this type. This is due to the general principled approach, inherent in all bourgeois economics, to analysis of the development and to compilation of the programme, the attempt to explain a complex process by analysing a limited number of assumptions. Initially, attempts were made to apply non-complex dynamic models for programming the entire reproduction process. On the assumption that the technological coefficients  $a_{ij}$  and the capital coefficients  $b_{ij}$  are constant, only simple balanced growth in the framework of the total of sectors and branches included in the model can be analysed. If  $a_{ij}$  and  $b_{ij}$  are taken as variables, the picture obtained might show a disproportionate structure with resources not used to the full. In both cases, the given variety of model does not provide

a positive solution to the problem of achieving a stable price system. The drawbacks include the fact that, in drawing up a programme using such models, a single type of production process is assumed for each sector, an unchanging level of specialisation, a limited possibility of including the effect of the substitution of production factors, and a coincidence of the concepts "economic" and "pure" sectors.

The practical difficulties encountered in applying such models raised the need for a transition to forms of economic development simulation more suited to the demands of programming. The modification and sophistication of multisectoral draft programmes led to new characteristics and dependencies (production functions, functions for capital-forming sectors, dependencies between prices, output, incomes and technological coefficients) being introduced into the input-output model. The increased complexity of the dynamic model was geared to determining the influence exerted by government measures in the formation of the structure of production, investment, prices and incomes on the activities of individual economic units. Thus, the methodology of multisectoral programming began to go over from general assessment of the results of government decisions to specific analysis of actual practical measures, from their impact on the economy as a whole to ascertaining the consequences of this policy in each economic sector.

The limited possibility of considering reproduction problems in the framework of any particular model gave rise to the need for using a complex of models. Initially, the application of various models for drafting programmes involved the parameters of the more aggregate types of model serving as general constraints on the calculation of indicators in the disaggregated models. The further development of the methods of macro-economic programming led to the formulation of a system of interconnected models.

The set of programming models has evolved in two main directions. The first is the construction of models describing various economic processes—the interaction of technical and economic aspects in the course of reproduction (including a detailed description of the actual production process, with elements of the selection of technical means,



as well as distribution, exchange and consumption). The purpose of such models is to picture the dynamics of the national economy in the form of national accounts. An example of such a system of models is the Cambridge medium-term model used for working out the Labour Government's National Plan for 1965-70.

This describes a large number of interconnections in the economy and, at the same time, allows various possible external conditions to be taken into account. The system of block matrices in the Cambridge model ensures that the indicators are successive and quantifiable. The indicators of the model are co-ordinated by applying the basic principle of connections between balances that is used in national accounts—that of connections “by structure”. This makes it possible for the block matrices to reflect the movement of the material, financial and value flows and provide for the transition from production to incomes, from incomes to consumption and accumulation, and from accumulation to labour and production. The results of the calculations according to the model are presented in the form of a block matrix—an integrated balance table describing the physical and value equilibrium in the economy.

The Cambridge model has certain advantages over the simplest ones, in which accumulation of fixed assets, circulating assets, stocks and reserves is represented for each element by a single column. This system provided information on sectors producing the output that made up the elements of this column, but did not describe its distribution between consumer sectors. The Cambridge model envisages both matrices describing flows of productive and non-productive investment, and matrices of productive stocks. Of particular interest is the model's system of investment matrices, reflecting the future physical and value turnover of investment goods in Britain, including consumer durables. The system identifies sectoral demands for investment in replacing wear and tear and expanding production, as well as investment to be swallowed up by the non-productive sphere. Also specially isolated is the summary capital account of so-called social sectors, this making it possible to reveal both their overall requirements for investment, and those of the individual sectors. The tasks of the Cambridge model as an economic growth model dictate the need for

a detailed elaboration of matrices for the flows of capital (almost half the calculations of the block matrix).

In the original variant of the Cambridge model, like in the simple intersectoral model, there were no data on labour expenditures on the sectoral plane. The total amount of labour was taken as given; its distribution by sector by means of the so-called labour distributor took place outside the model, as a result of which a system of variables was obtained reflecting the “structure of the resources of labour”. As the Cambridge model was developed, more detail was added to the matrix of labour resources, the essence of which is to determine the correlation between the supply and demand not for labour in general, but for labour differentiated in qualification and professional terms.

The scheme of calculations for the Cambridge model was built on a principle common to all programmes—the isolation of sectors that take decisions (there are six such sectors in the model) and the establishment of limits to the impact of these sectors' policies. It is difficult to trace this effect, this being conditioned by the form in which the multiple links in the blocks of complex multisectoral models are reflected.

Multistage calculations constitute the second direction in which the methods for elaborating programmes are being made more sophisticated. In practice, this description of the development of the economy is achieved using a system of interconnected models and submodels aggregated to different degrees.

Multistage constructions are one way in which programming methods are being developed during the extensive expansion of the application of multisectoral models. In French programming practice, too, the multisectoral level is tending to expand extensively. Detailed calculations are carried out using a system of submodels based on national accounts' information, which includes a demographic model for determining the employment level and the demand for manpower; a model for calculating personal consumption and consumption in the productive sphere; investment in the non-productive sphere, including in housing construction; investment and stocks in the productive sphere, the volume and structure of exports and imports. The various aspects of socio-economic development are being drawn into the sphere of analysis and calculation on one

level, as it were. In order to avoid this limitation, in addition to the horizontal expansion of the system of calculations, a vertical scheme is formed. This takes the shape of a pyramid, i.e., each successive stage in the calculations has a broader base, and the further it is from the summit, the more detailed the description it gives of the future state of the economy.

For medium-term programming, a consolidated model of physical equilibrium is used in the form of a system of intersectoral models with varying degrees of detail. The calculations are carried out in base prices. The initial calculations of the growth rate and structure of the economy are made from a three- or four-sector model (agriculture, industry, trade and services), making it possible to forecast more specifically the level and rate of economic development by determining the increment in social production, taking account of the expenditure of manpower and investment. At this stage, the calculations are made from an over-aggregated standard base. This explains why the interconnected calculation of the combined impact of several factors on the structure of the economy, using the aggregate intersectoral balance and production function, nowhere near solves the set problem. At the same time, the first model uses primarily constant coefficients of direct inputs, while the second uses unchanging capital coefficients. Then more detailed calculations are made of the physical equilibrium by sector, applying a system of submodels based on national accounts. Since the calculations are made in base prices, the interconnections and correlations characteristic of the past period are automatically carried over into the intersectoral forecast model. As the trends in supply and demand for each product differ at different times, owing to price changes, these interconnections carried over automatically into the intersectoral forecast model do not correspond to the new physical volume correlations established in it.

In French programming practice, a financial equilibrium model is applied for calculating the so-called financial, or value equilibrium, the goal of which is to bring the physical equilibrium calculated for the future into line with the system of prices and incomes changing under the impact of future supply and demand. The financial equilibrium model includes a system of submodels for calculating

the structure of incomes and the state of financial indebtedness in all public sectors, including so-called real ones. The submodels are used for finding the structure of incomes required for financing the volume and the structure of the final demand calculated for the physical equilibrium model. The state attaches particular importance to financial instruments, for it is these that, in practice, redistribute material resources.

The successive adaptation of physical and financial characteristics should lead to a balance in the economy as a whole. The indicators worked out from the physical equilibrium model are reviewed to this end. All calculations lead to the construction of summary tables for the future—both economic and financial—which are regarded as the key documents of the programme.

The procedure by which French programmes are drawn up is as follows. First, the possible growth of the final product for the maximum foreseeable future (up to 20 years) is established with the help of the model for selecting possible growth rates. Then the same thing is done for three sectors in constant prices. Then again, variable prices are introduced and the key financial agents pinpointed.

The second and third levels in the calculations constitute a more disaggregated economic system. The categories of resources and groups of economic units and financial operations are all more differentiated. At the third level, the calculations are carried out for the most detailed list of economic sectors, with the same differentiation of the programme's regional breakdown as in the second level.

The system of calculations for the Japanese national economic development "plan" is another variety of multi-level technique for elaborating macro-economic programmes. The system functioned on the basis of economic models with precisely formulated instrumental and target variables: the first long-term (up to 1985), the second long-term for a shorter period (up to 1975), the medium-term (up to 1968), intersectoral and unified model. It also takes a stricter economic approach to assessing the structural parameters and control mechanism of the interconnections between the long-term and medium-term models, sectoral and national economic ones. This system of models was first used in the elaboration of the Intermediate Plan for the Economic Development of Japan for 1964-68.



The first two models were based on long-term annual statistical series from 1906 to 1960, while the medium-term macro-model used half-yearly statistical series from 1950 to 1962. The long-term and medium-term models are mutually complementary, since the former deal with the policy for the growth of productive capacity in the long term, while the latter deal with stabilisation policy with respect to demand for a short period.

The medium-term macro-model includes 24 structural and 19 balance equations and is based on statistical data for 1953-62, measured at six-month intervals. Since the model contains many non-linear equations, because of the purely mechanical difficulties involved in the calculations of the model as a whole, three blocks are isolated in it. In the first block, a linear system of equations provides the basis for determining real gross expenditures and their components, represented by such variables as the volume of the national income in the previous period, foreign trade and public spending in the current period. The second block, characterising the dynamics of prices, wages, employment, and so on, is described by non-linear equations. The third block determines the level of the distributed income in current prices.

The medium-term macro-model is directly connected with the intersectoral one through aggregate final demand. Its purpose is to estimate the final demand, disaggregated for 60 sectors of production, imports and capital in 1968. This is done on the basis of aggregate estimates of outlay obtained from the medium-term macro-model, and analysis of the results in comparison with the indices of industrial production, imports, the numbers employed and gross private investment planned in the macro-model on the sectoral basis. Thus, the reliability of both models is tested.

In addition to the elaboration of long-term macro-models for 1975 and 1985, and medium-term and intersectoral models for 1968, attempts were made to synthesise them. The resulting combined model was designed to test the interconnection between the parameters obtained from the aggregate and sectoral drafts, based on the medium-term macro-model and the intersectoral model for 1968. Besides, the model was called on to establish the interconnection between the aggregate effect of demand, as determined

with the help of the medium-term macro-model, and the aggregate productive capacity obtained from the long-term model through the price and wage mechanism.

The models used in capitalist programming reflect primarily the historically determined stage in the development of econometrics—the bourgeois economic science for studying the complex interconnections in the development of modern production, productive forces in general and, at the same time, serving the capitalist form in which these productive forces are used.

### Macro-Economic Planning and Programming Methods in the Developing Countries

The problem of the methodological principles behind planning is no abstract scientific one for the developing countries. It is part of a major practical problem—that of eliminating economic backwardness as soon as possible. More effective planning means, *ceteris paribus*, more rapid socio-economic progress. Hence the considerable attention focussed on the methodological aspects of planning, both in the developing countries themselves and in various international organisations dealing with the problems of economic development.

The initial general outlines of the methodology and methods used for elaborating plans and programmes were adopted by the developing countries from the developed capitalist ones in the form of forecasting methods. All subsequent advances in this sphere constitute a complex enforced adaptation of the methods used to the specific conditions and requirements of the developing economies, given a growing interest in the principles and methods of socialist planning.

The diversity of development levels, local conditions, and socio-economic peculiarities of the newly-free countries decide the extent to which the plans cover the various sectors of the economy and the different types of planning methods. The political situation in the country, the influence exerted by external factors, especially fluctuations on the world capitalist market, determine not only the plan's

goals and how feasible they are, but also the possibility of implementing it.

The economy of any country develops according to objective laws and has inherent development goals. In the newly-free countries, the goals of government economic policy or of plans and programmes for economic development are:

- a rapid increase in the per capita income;
- a high employment level;
- relatively stable prices;
- balance-of-payments equilibrium;
- elimination of inequality in the income distribution;
- removal of the sharp differences in the well-being and development of individual regions of the country;
- the creation of a comprehensively developed economy.

In this it is stressed that the main goal is the first one—the rapid per capita income rise.

Nothing can be said against such an “all-embracing” recommendatory list of economic development goals, but certain comments should be made. First, let us note that the rise in the per capita national income cannot, evidently, be the general goal of an economy that gives preference to private enterprise, for the incentive to this is the creaming off of maximum profits. Consequently, a very difficult task is set for government economic policy in regulating the development of the private sector: that of creating conditions that allow maximum profit for private entrepreneurs as well as for maximum national income. Yet, as the practice of the capitalist countries’ development has shown, these conditions are far from identical; in fact, they are fundamentally contradictory.

It is important to note a dynamic aspect of the problem of national income growth rates. A maximum growth of the national income can, undoubtedly, be achieved in a short time (3 to 4 years, for instance), primarily through the development of agriculture and industry producing consumer goods. This is connected with the higher share of incomes and the reduced investment lag in these sectors. In other words, maximum national income growth and economic industrialisation, especially the development of heavy industry, might prove contradictory goals, but this contradiction disappears if economic development is considered over a longer time period. This applies fully to the

problem of maximising the growth rate of consumption, too. In solving this, it must always be remembered that there is a specific correlation between productive accumulation and consumption in the national income. Thus, while setting the goal of economic development as the attainment, by a certain date, a specific rise in the per capita national income, the plan must create the necessary conditions for a growth of the national income beyond the plan period, too. This means that the policy of industrialisation, especially the development of heavy industry, meets the vital demands of the newly-free countries’ economic development, for it is the basis for a high and stable growth rate of the economy and the standard of living and ensures the country’s economic independence. At the same time, it should be underlined, in particular, that the development of local heavy industry must be carried out within economically justified limits, as determined by the availability of the necessary natural resources, skilled personnel, and the country’s role in the international division of labour.

The Polish economist Kalecki, who was economic consultant to a number of developing countries, considers that, in drawing up the plan, the country must try to ensure that the national income growth does not reduce current consumption or existing productive capacity; that investments are utilised effectively; that the share of non-productive accumulation and reserves suffice for the development of the non-productive sphere; that foreign credits are not excessive; that the foreign trade balance and the balance of manpower are taken into account in the best possible way.

The elaboration of the plan raises the problem of co-ordinating the goals of development and the overall balance of all its indicators. This is important, for there is sometimes a tendency to distort the meaning and tasks of industrialisation. A rapid growth of individual sectors is occasionally regarded as a symbol of economic and technological progress, though, in practice, it may reduce the overall efficiency of production. Industrialisation of the country is carried out not for the sake of industrialisation itself. It is a means to an end arising from the long-term plan. The development of individual sectors of the national economy and branches of industry must take place in accordance with the overall tasks of developing production



and consumption, the latter being expressed in the national income growth.

Do high national income growth rates and rapid industrialisation always meet the interests of the peoples of these countries? Given the current international division of labour, the multinational corporations try to establish economic structures that, while maintaining the system of unequal exchange, will provide the monopolies with cheap manpower for the development of export production. Development that suits the foreign monopolies does not lead to an expansion of the internal sizable market. The market for luxuries grows rapidly, however, as a result of the high incomes received by the owners of export plants.

The documents of the UN Economic Commission for Africa, which were prepared for the 6th conference of the continent's planners, noted that the recent development of many newly-free African countries had shown that reliance on economic growth as such was pointless.

These considerations allow a sober assessment of the purely quantitative indicators of development and also testify to the need for analysis of development goals from the angle of individual classes and population groups, i.e., in the interests of which classes and at whose expense the economic development is to take place.

Once this problem directly connected with the goals of economic development is solved, the elaboration of the programme begins. In order to determine the rate of growth of the economy as a whole, usually macro-economic models are used that are expressed in terms of such synthetic economic indicators as the national income (net national product), investment, savings, consumption and employment. In such models, attempts are made to show with which factors the planning bodies can influence the rate of economic development. The first of these is the savings rate in the national income, and savings are, moreover, assumed to be equal to investments.

In considering the model of the economy, consisting of industrial and agricultural sectors, it is often claimed that countries with a currently high per capita income level achieved this as a result of a dual shift in the structure of employment: first, an increase in the share of employment in the industrial sector and, second, a change in the structure of employment in agriculture in favour of

large-scale mechanised commercial units. This may be regarded as a recommendation to the developing countries that they industrialise and develop a large-scale industrial agriculture. Both provide the foundations for a rise in labour productivity—the decisive criterion of the level of a country's economic development. History has shown that the creation of a large-scale commercial, highly productive agriculture is only possible in two directions: the creation of a large-scale capitalist agriculture and the creation of a large-scale agriculture based on the voluntary joining together of small peasant economies into co-operatives. The first way, as history has also taught us, is inseparably linked with mass unemployment and the impoverishment of broad sections of the toiling peasantry. The second, however, meets the vital interests of the newly-free countries' economic development, for it involves a rise in the peasants' living standards, which is the direction taken to some degree or other by such countries as India, Algeria, and Burma. In two-sectoral models, this important question is bypassed and only the formal aspects of the building of the model are considered.

Another important problem that the planning bodies in the developing countries have to solve is that of the correlation between foreign trade and local production. The underdeveloped countries have always played the role of the agrarian and raw material appendages of the imperialist states, which did everything they could to hold back the development of local heavy industry, seeing this as a threat to their economic dominion. Now the lop-sided nature of the newly-free countries' economic development makes them greatly dependent on the world capitalist market, though they are relying more and more on the help of the socialist countries in their economic development.

Any country must, in determining the goals of its economic development, establish the extent to which the various requirements can be met by imports and what part of output should be exported. In this context, the extremely difficult problem arises of defining the efficiency of foreign trade. A solution to this problem presumes a choice of which products to import and export and in what quantities.

In methodological material relating to the problems involved in elaborating economic programmes in the newly-free countries, two possible ways are indicated:

—from the aggregate level considered above to the multisectoral and sectoral one, and then to product and project analysis with adjustment and co-ordination in stages;

—the pooling of individual projects in a sectoral (including industrial) and, if possible, a national programme.

In the majority of developing countries, however, the idea of drawing up comprehensive plans has got no further than macro-economic planning outlines on the basis of the simplest Western econometric models. The calculations made from these require a whole series of conditions and assumptions, the main one being stability of most economic parameters. If such macro-economic forecasts are not co-ordinated with detailed drafts, at least on the sectoral level, there is very little possibility of them being realised.

At their 6th conference, the African planners noted that previous approaches to planning, which emphasised the particular importance of aggregate economic growth models and left out key details, could not provide for the all-round and fair development of nations and regions. "Applications of Unified Approach to Development Analysis and Planning under African Conditions" stresses the need for "diagnosis" as the basis of planning and notes the importance of including more detailed indicators on such issues as the services that might be enjoyed by the poverty-stricken majority, regional development and participation by local authorities schemes for the development of rural localities, and so on. In a certain sense, the construction of the plan by combining realistic projects into a single programme at the initial stages is evidently of more use than macro-economic calculations describing only the most general economic development trends.

Usually the first stage of initial planning is diagnosis and forecasting, including analysis of existing development trends, the influence of external and internal factors, macro-economic calculations of the growth rate of the national income, exports, consumption, investment, imports, the influence of these calculations on the balance of payments, and co-ordination of preliminary calculations in the macro-economic model of the plan. The basis for these assessments is provided by the system of national accounts. Balance models of the national accounts type, giv-

ing a picture of the dynamics and interconnections between macro-economic values, are used quite often in planning in the developing countries. Also employed as elements of technological planning in the initial stages are production functions, Feldman-Harrod-Domar type models and intersectoral input-output models.

The desire of the developing countries to raise the effectiveness of their planning and achieve a higher degree of reliability and balance in their plans has aroused the interest of the planning services in the methodological aspects of planning, and in mathematical economic ones in particular.

It is indicative that many countries have carried out considerable work on compiling intersectoral input-output tables. The planning commissions of many developing countries include special sections dealing with the compilation of intersectoral models and their application for various purposes.

The simulation of social phenomena is a new and effective instrument of cognition. Economic simulation is applied not to the entire complex of economic relations, but only to a particular range of economic processes. Mathematical economic models are built according to the principle: input (expenditures, resources)-output (results, product). These models have not been built specially for the developing countries, but taken straight from the theory and practice of capitalist programming, and are not applicable to the conditions existing in the developing economies.

At what planning stages can mathematical economic methods be employed? A stage-by-stage scheme of the planning process in the developing countries at the present time looks like this:

1. The setting of development goals by the leading political establishments.
2. The elaboration of the draft plan by the state planning bodies.
3. Discussion of the draft plan and the introduction of amendments.
4. Discussion by the planning bodies of the final variants of the plan.
5. The organisation of supervision over fulfilment of the plan.

This scheme shows that the use of mathematical eco-



conomic models is possible at the second stage, for assessing the development prospects over the next two or three medium-term plan periods (forecasting) and for drawing up an outline of the plan, using macro-economic, multisectoral and sectoral models, and also at the fourth stage, for testing that the final variant of the plan is balanced.

India's second five-year plan, for instance, depended largely on a model built by the Indian economist P. C. Mahalanobis. It is an independent variant of the Feldman-Harrod-Domar model, and, despite its obvious shortcomings—abstraction from certain aspects of social reproduction—it is used in various modifications in many developing countries. This is because at present it is a very useful instrument for building the framework of the plan for determining the rates and main proportions of development. In a number of published researches, the model has been enriched with new dependencies and variables.

For instance, the "short-term planning model" by another Indian economist, N. Narasimhan, consists of 18 equations obtained by linear regression and 30 variables. In contrast to Mahalanobis, Narasimhan introduced demand, incomes, prices, foreign trade and a number of other major parameters into the model. A well-known economist A. Khan proposed a very similar model for the third five-year plan of his country.

In using only macro-models, the elaboration of the plan is confined to the calculation of global indicators. Moreover, if the planning procedure rests on only macro-models, without other analytical methods, such as sectoral calculations and the intersectoral balance, the plan may contain serious miscalculations. This is because, in a highly heterogeneous economy, including both modern and cottage industries, the application of highly aggregated parameters involves the danger of employing average indicators for processes that are different in nature and sometimes in direction. Another drawback of such a plan is that it gives no answer to a whole number of important questions connected with the balanced distribution of investment between sectors. Thus, today the model of the intersectoral balance is an essential instrument of planning. Intersectoral input-output tables are drawn up in virtually all countries. The first to base their programmes on these were Argentina, Colombia, and Peru.

At the end of the 50s in Argentina, an intersectoral balance was used in drawing up a development programme for the economy for 1962 and 1967. To calculate the future level of production, the requirements of the sectors of the Argentinian economy for production resources and imports, a 200-product intersectoral balance for 1953 and static intersectoral models for 23 and 12 sectors built on it were used for balancing the programme for the development of individual sectors.

The work carried out in various countries on applying intersectoral models varies in quality, scale and degree of interconnection with planning practice. This connection is most evident, for example, in such Asian countries as India and others. India was one of the first developing countries to begin intersectoral modelling on the basis of research carried out by the Indian Statistical Institute. The first table, including 23 sectors, was presented by the economists Choudhury and Goodwin. Later, the number of sectors was increased, first to 36, and then to 50. Since 1959, the Planning Commission has been dealing with intersectoral research. Two periods can be traced in the work of Indian economists on intersectoral links.

The first (up to the 60s) was devoted to various methodological questions connected with the compilation of tables: the collection of statistical data, the aggregation of sectors, and so on. The second period was characterised by attempts to make practical use of the model for economic analysis and programming development. The mid-60s saw attempts to apply the intersectoral balance method in programming the Indian economy. On the basis of a partially modified open static intersectoral model, forecasts were made of the sectoral outputs for 1970/71, and then for 1975/76. The modification consisted in the inclusion of certain capital-product coefficients. The model was used to make calculations in which investment in the final product was defined as "partially endogenous" (four engineering sectors). Later, the model built by the American economists Manne and Bergsman was used as the basis for forecasting 30 sectors for each year of the 1965/66 to 1975/76 decade. Moreover, for a number of sectors, investment in the final product was determined independently of the solution of the model. In each of the two models mentioned, two variants of the structure of the final prod-

uct are used, reflecting two alternative types of economic development for the Indian economy for 1965/66 and 1975/76. The first of the models envisaged higher growth rates of production and population incomes, and expressed the viewpoint of the Planning Commission and the Government; the second presumed lower growth rates of production and consumption, taking account of three different variants of the policy of import substitution for 1965-76. Certain simplifications made in these models reduce the value of the research carried out: estimates of the need for imports and investment were not co-ordinated with other forecast indicators, in connection with the interpolation of the final product and gross outputs and, what is more, since they were based on technological and capital coefficients that did not change over time, the calculations virtually left out of account the changes in the technology and structure of production that are inevitable over a ten-year period of industrialisation.

Intersectoral research in India is constantly developing. The new intersectoral model of the national economy includes 328 branches and sectors. In practical planning for the fifth five-year period, an intersectoral balance with 66 branches and sectors was used.

In other countries, certain experience has also been accumulated, though research in the sphere of intersectoral ties began about ten years later than in India. The most interesting is the model used for the checking of the equilibrium of the plan which was the result of many decentralised decisions. The model contained 98 equations, based on an intersectoral model, and 105 variables. The exogenous quantities are agricultural production, the share of accumulation in the national income, exports, the national product and certain other parameters. The model is of particular interest in that its technological coefficients are taken not as constant, but as marginal, growth ones. This approach deserves attention, since it pinpoints one possible way of adapting the traditional input-output model to the specific conditions of the developing countries.

One of the main shortcomings of the given model was that it took no account of the regional aspect, which was of particular importance. In connection with this, work began on a detailed interregional, intersectoral balance covering 56 sectors.

The interest shown in intersectoral models in the developing countries prompts the conclusion that, in the near future, the different variants of this model will play the main role in the elaboration of economic development strategy. At the same time, this model, even in a greatly disaggregated form, cannot replace the plan, since it does not contain the main production unit—the enterprise. In addition, there is little statistical information available in the developing countries of the sort required for reliable calculations, and a number of problems connected with calculating expenditure coefficients are still unsolved.

The use of intersectoral models for practical purposes follows these lines:

- the elaboration of a draft plan and testing that it is balanced;

- forecasting of the main economic parameters;

- calculation of alternative variants and, consequently, a search for optimal solutions.

Recently, economists and planners in the newly-free countries have been focussing on the problems of optimal development. Although it is still a long way to the solution of this problem, certain promising ways have been found.

The developing countries that are just introducing planning can, for objective socio-economic reasons, count on achieving a low-level optimum, but as the planning methods used in management are developed and mastered, the level of the optimum and, consequently, the complexity of the tasks undertaken, increase.

It is unrealistic to imagine that the economies of the newly-free countries could develop strictly according to the theoretically possible optimal trajectory, since the indeterminacy of the future of the entire system is very great here. This is connected, for example, with the discovery of new deposits of minerals, scientific and technological inventions and their introduction, the instability of the political regimes, the certain indeterminacy of the sources of external funds, the fluctuations in prices on the world market, and so on. A knowledge of the optimal trajectory does, however, make it possible to formulate economic policy in such a way that the real development course might be asymptotic to the optimal, while the entire development strategy will then be elaborated in order to



minimise the divergence between the two lines at each moment in time.

One of the fundamental aspects of optimal planning is the formulation of the target function reflecting the goal of development. The question of the target function in the developing countries is considered as that of the goals and tasks arising from the need to overcome socio-economic backwardness as fast as possible. Major difficulties arise in this, however, because certain qualitative goals are so far difficult to quantify. This substantially limits the quality of the target function, but is not a decisive argument for rejecting it.

At present, there are three known groups of optimality criteria:

- maximisation of certain key economic indicators (such as the national income, the volume of consumption, the volume of the production of capital goods, the employment level, exports, import substitution, and so on);

- minimisation of the time taken for the transition from one functioning regime to another;

- minimisation of the social expenditure on attaining a specific level of economic development.

The fact that there are many criteria makes the search for an optimum even more difficult, since the problem of selecting a criterion is sufficiently complex in itself.

The difficulty involved in constructing the criterion consists in the fact that it must somehow reconcile the conflicting goals of development. This problem is resolved at present by ranking and weighing goals according to their importance.

The usual plan can be drawn up by the successive summing of the plans for individual enterprises, regions, and so on, i.e., by rising from the lowest links in the system to the highest, whereas the procedure in optimal planning has to be the reverse—a successive transition from the highest units to the lowest. It is still premature to speak of an optimal functioning of the units at the levels under the conditions of the developing countries. The goals of optimal planning are different here, namely: to use the new set of scientific instruments of the theory of optimal planning in an attempt to improve the quality of centralised decisions connected with economic development planning. In this case, the newly-free countries must precisely formu-

late their goals and tasks of development, set themselves only feasible targets, constantly assess available resources and seek effective ways to increase state resources and fulfil plans. The introduction of elements of optimisation into the plan calculations permits a stricter approach to be taken to the listed problems and better methods for their solution to be defined. Ideally, successive optimisation must involve the following stages:

1. Determination of the accumulation rate.

2. Determination of the correlation between investment in the production of consumer and capital goods.

3. Determination of the multisectoral structure of investment.

4. Determination of the programme for the sector.

5. Determination of the programme for the enterprise.

At the present time, there is no point in talking about such all-embracing optimisation under conditions existing in developing countries. Either stages 1 to 3 or stages 4 and 5 are of practical interest.

There are several approaches to optimising the development course of an underdeveloped economy. Most works on the optimisation of macro-models are extremely abstract. Though they describe in detail the principles and the actual mechanism of economic growth, given various assumptions, they are rather an element of economic theory of the highest order than a planning theory designed to solve more concrete, down-to-earth problems.

Recent work has involved a search for ways to resolve just such practical problems. One illustration of this is the construction of the first optimisation, input-output models. The simplest method of solution is proposed by J. Sandee in his book *The Demonstration Planning Model for India*. The author himself called the work experimental and descriptive, but it is also of methodological significance, since it was one of the first works in the sphere. Sandee used the simplex method to maximise consumption at the end of a ten-year period and obtained estimates of output for the key sectors of material production. The work of the economists Chakravarti and Lefebvre is similar in many ways. They used the data of India's third plan to determine the optimal level of consumption and compare it with the level indicated in the plan. The target function was maximum consumption over the entire plan period.

The Indian economist Mathur raised an interesting problem. He tried to determine the shortest time required for the economy to transform its old technical base into a new one. He divides production into two sectors—that with the old technology and that with new—each of which has its own coefficients. It is assumed that capital formation takes place only in the sector with new technology. Mathur was not, however, able to solve the problem.

In addition to the works enumerated above, many others could be mentioned, which testifies to the considerable interest shown by scientific circles in the developing countries in the important and difficult problems of effective development courses within the framework of a programme, co-ordinated by the state, for the transformation of stagnant socio-economic structures.

Research into this sphere is also going on outside the developing world. Economists in the socialist countries are using the considerable experience accumulated in planning in their own countries to build models applicable to the conditions of the developing ones. The range of such research is wide—from a comprehensive model of economic development to partial models. One example of a comprehensive model is that of Leningrad Professor I. V. Aleshina. This includes a single-product model of the economy, a dynamic intersectoral model and a model for the co-ordination of economic development plans of co-operating countries. Prof. Aleshina's model is basically distinguished from the models developed by Western economists in that, in addition to functional links, it takes account of the socio-economic aspect of the subject of the model. In particular, it makes it possible to trace in considerable detail the economic links between the public and private (domestic and foreign) sectors without ignoring the growth rate of the economy as a whole and its sectoral structure.

Partial models can be represented by Kalecki's model of non-inflationary growth of the mixed economy. There are two limitations to this model. The first is that economic growth cannot be financed through taxation of people with low incomes or of essentials. The second is that the prices of essentials are stable. On these conditions, taxes on the incomes of the rich population groups and luxury goods provide the source of additional investment. Kalecki's models of non-inflationary growth is counterposed to the

model of inflationary growth, in which the rapid growth rate of the national income is financed by taxing the poorest people. It follows from the model that the rapid growth of the production of luxuries is a direct consequence of this policy. The main outlays on growth come from the working people, while the results of the growth are acquired by the well-off classes.

The considerable differences between the developing countries in terms of economic development, the role of the public sector in the national economy, the ideology of the ruling circles, the availability of experts, the quality of the statistical base and, finally, the accumulated experience of planning, determine to a decisive extent the pragmatic planning methods which, in many cases, differ significantly from the theoretical recommendations.

Among the diverse planning practices in the developing countries, three approaches can be ascertained most clearly.

The first is characteristic of countries just introducing economic planning. Having no planning experience and lacking a sufficiently effective state management apparatus and many other preconditions for planning, these countries confine themselves to elaborating state investment programmes that, as a rule, do not embrace other sectors of the economy. In general, the scheme for drawing up the plan is as follows: the government or central planning body requests ministries to present their plans in the form of a list of proposed projects; then the projects are brought together centrally (projects not complying with the government's intentions and priorities are rejected, and the total cost of the remaining ones calculated); for its part, the central planning body forecasts government resources, compares these with slated outlays and, using the simple Harrod-Domar single-sector macro-economic model, assesses the prospects for the economy's development over the plan period. This is the scheme according to which the first plans of many developing countries have been compiled.

The second approach, used probably by the majority of the developing countries, consists of a more complex methodology for drawing up the plan. This is characterised, first of all, by closer contacts between the central planning bodies and ministries and other organisations, both state and private, and, second, by a deeper analysis of the



prospects for the development of the non-state sectors in the plan period. Its third characteristic is attempts to draw up long-term development outlines for 10 to 20 years ahead, and its fourth—the use of more complex econometric models, particularly those of the intersectoral balance.

Finally, the third approach is typical of countries that have accumulated a certain experience of planning, such as India, Algeria, Venezuela, and Mexico. In these countries, a quite considerable experience of planning has been accumulated in the public sector and some in regulating the private capitalist sector. Here the national plan includes not only programmes for state investment, but also those for other sectors, the fulfilment of which the state intends to ensure by employing various economic policy instruments: taxes, credits, prices, subsidies, duties, tariffs, and so on.

As noted previously, the Indian approach to planning is based both on the methods of capitalist programming and on certain of the methods used in socialist planning. The Indian planning methods used to draw up the fourth five-year plan were as follows. The work on the plan began in the Long-Term Planning Department of the Planning Commission, long before the end of the current plan, with outlines of the growth rate of the national income and efficiency, i.e., on the basis of the Harrod-Domar model. The level of investment was determined as the remainder in the national income after calculation of the minimum per capita consumption level. The Long-Term Planning Department elaborated a draft plan based on indicators of the overall economic forecasts and material balances. A forecast was made of the gross domestic product, the total sum used and its structure, and the required foreign aid estimated. The compilers of the fourth plan envisaged a final end to foreign aid in 1975-76. The commodity structure of production was determined on the basis of the forecast structure of demand, based on elasticity coefficients that allow the change in the demand for an item in response to changes in incomes to be determined. As a result, the target volumes were decided for 40 indicators in agriculture, 16 in the mining industry, 165 in the manufacturing industry, with 90 types of machines and transport equipment mentioned separately. The targets were set in physical terms for 1960/61, 1965/66, 1970/71 and 1975/76,

while for machinery and transport equipment they were set for each year of the fourth plan (1969-74).

At the same time, the Long-Term Planning Department elaborated a whole series of material balances for the coming five-year period. For the fourth plan, 35 balances were prepared, chiefly for raw materials—coal, oil products, steel, cement, electricity, and so on. One drawback to these balances is that they are not broken down into annual ones, but compiled for the five-year period, with the result that the Indian planners lack an adequate base for drawing up annual plans.

In drawing up the plan, the Long-Term Planning Department uses the multiple data provided by scientific research organisations, and especially material prepared in the Indian Statistical Institute under the Central Statistical Service. The models of intersectoral ties developed by this Institute are beginning to be widely applied in Indian planning. The Planning Commission attaches considerable significance to intersectoral models, so it has set up a special department to deal with them. For the preparation of sectoral programmes, the Planning Commission establishes so-called working groups of 10 to 15 people, including members of the Commission and associates of the relevant ministries. Twenty-three such groups were set up during the drawing up of the third five-year plan.

Each group is expected to consider data provided by research institutes, the viewpoint of consultants, private entrepreneurs and representatives of state enterprises. The work of the group follows roughly this pattern: on the basis of the tasks received from the Planning Commission, the working group determines the required level of expenditure, which is compared with the resources allocated to the various sectors. In the light of the financial and other limitations, the group reconsiders its initial proposals. Then the Planning Commission presents the Cabinet and the National Development Council with a brief memorandum of the plan. Once this has been approved, the Planning Commission prepares a more developed draft of the plan, which is discussed broadly in Parliament and by the public. At the same time, the Commission holds consultations with private entrepreneurs, ministries and the governments of the various states in the country. The final version of the plan is presented to the Government, the National Development

opment Council and Parliament. Officially, after being approved by Parliament, the plan acquires force of law. In reality however, this pattern is not so clear-cut and seems much more complex.

In the newly-free countries developing in a non-capitalist direction, two interconnected processes can be seen in the planning sphere: expansion of the subject of the plan and development of the methodology employed for forming a system of economic indicators, with balance calculations being used increasingly. At the same time, more and more attempts are made to apply the planning experience of the socialist countries. The following forms and trends in this can be observed in the socialist-oriented countries:

- a certain similarity in the organisation and structure of planning bodies;
- the use of individual methods and means of planning;
- the inclusion in the national plans of certain sections and indicators similar to analogous sections and indicators of the socialist countries' plans;
- organisation of supervision and reporting on the fulfilment of individual plan targets.

The newly-free countries' acute need for financial resources, the chief types of raw material, fuel, electricity and equipment and the necessity of strict accounting have resulted, in recent times, in the application of the material balances method as the most effective way of getting rid of imbalances in their economies.

The country that at one time accumulated experience of using this method (especially balances for individual products) was Egypt. By the beginning of 1969, the country had developed about 300 material balances. At that time, Egypt had an operational and fairly complex system of balance calculations for almost all the main industrial and agricultural products (electricity, coal, oil products, ferrous and non-ferrous metals, the main types of industrial and transport equipment, and basic industrial and grain crops). Using these balances, the Egyptian planning bodies tried to provide for intrasectoral and intersectoral proportions corresponding to the plan targets.<sup>1</sup> Balance meth-

<sup>1</sup> The Egyptian Government's policy of encouraging private enterprise and attracting foreign capital has considerably limited the opportunities for state regulation of economic development and resulted in narrowed foundations on which planning was pre-

ods are being introduced into planning in Algeria, Mali, and the Congo, and have become particularly widely used in budget and foreign trade planning.

Practice has shown that, without substantiated standards, the planning bodies of the developing countries encounter substantial difficulties both in elaborating physical and physical-value balances, and in drawing up plans of intersectoral balances. The main condition for the successful application of the socialist countries' planning experience in the developing states is mastering of the methods for elaborating standard data.

The use of individual elements of the socialist experience of planning, in particular material balances, is an incentive to create a specific system of indicators, especially those for which material balances are compiled. The fact that a number of socialist-oriented countries have begun to elaborate a system of plan indicators helps them to set the quantitative and qualitative targets of the plan correctly. The key goals and provisions of the plan and its economic and political tasks are defined more precisely when such indicators are used. The plan indicators differ from country to country, but the most widespread are physical ones (set in specific physical units of measurement—tonnes, metres, kwh, units and so on); value (in monetary units) and qualitative indicators describing the level of expenditure of social labour, the extent of the use of production resources, expenditure rates of raw and other materials, fuel, electricity per unit of output and the like (set in absolute or relative values—the growth of labour productivity, the fall in production costs, the profitability of goods or enterprises, the increase in investment and equipment use efficiency).

The introduction of the material balance method into planning practice in the developing countries, and also the improvement in the system of plan indicators, constitute an improvement in the methodological principles of planning and lead to the formation of a single state policy in the sphere of finances, credit and wages.

Analysis of the plans for the economic and social development of a number of countries developing in a non-cap-

viously based. This, in turn, influences the development trends in the methodology for drawing up plans, since the plans themselves are becoming increasingly "indicative".



italist direction shows that the majority of them apply principles similar to those used in socialist planning, namely:

- determination of the current plan indicators using a study of initial (report) data and analysis of structural shifts in the country's economy;

- determination of the leading and most progressive sectors for the plan period and the creation of the conditions for their priority development;

- establishment of high economic development rates in the plan and observance of rational proportions in the economy;

- a striving to adhere to the principle of "maximum results from given resources", and others.

These aspects provide a description of the basically positive shifts in the development of state planning in countries following a non-capitalist development course. In the main, effective planning has still to be developed. In addition to applying the methods and means of socialist planning, the developing countries, including socialist-oriented ones, also use bourgeois programming and forecasting methods. One of the greatest dangers in doing this is that of ignoring the social aspects of development and levelling out indicators in the form of overall national characteristics, taking no account of class and social differences. Attempts to make the system of indicators consider social shifts will inevitably result in a differentiation of the most important plan parameters in accordance with existing differences in the forms of property and levels of technology development. This is important for defining the real possibilities for the development of each socio-economic structure, for determining the place of the state sector in the system of national economic links, for assessing its influence on the development of other sectors of the economy. The need for such a breakdown of the plan indicators is particularly clear when using the system of balance calculations and intersectoral models. A detailed reflection of the socio-economic structure of production and the use of output in intersectoral models makes it possible to trace the main links in the public, private national and foreign sectors, which is both important and necessary for resolving the specific tasks of plans and programmes. For an efficient distribution of material, labour and financial

resources, information is needed on the influence exerted by each element in the final product (public, private national and foreign investment, exports and non-productive consumption) on the level of production in the given sector; on the demand for manpower, capital and imports for each of these elements of the final product; on the demand for production resources per unit of each component of the final product for manufacturing a specific output.

Attempts to compile plans on the basis of a system of indicators taking account of the social aspect are already being made in the developing countries, though many difficulties are encountered in this. That is why the experience of the USSR and the other socialist countries in creating a set of planning indicators for the multistructured economy might be of great value to them.

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Thus, a review of the methods used to draw up national economic plans and national programmes for development makes it possible to pinpoint both specific and general trends in the development of planning methods. The common features in the formation trends of planning and programming methods are due to the formal similarity of the object (development of the national economy).

The all-embracing nature of socialist planning conditions the formation of planning methods that allow all the development characteristics of a single system for substantiating planning and economic decisions to be covered in order to attain the target complex of socio-economic tasks. Hence the need arises for the methods of balance calculations in mathematical economic simulation to be transformed, this creating an opportunity for seeking the best development variants. These consider the limitations on the key resources and ensure the attainment of a dynamic equilibrium under the conditions of constant structural changes in the complex economic mechanism.

Two specific features of the methodology of modern socialist planning must be stressed. First, the formulation of precise indicators of the fulfilment of the socio-economic tasks describing a concrete expression of the general demands made by the basic economic law of socialism, with respect to each development stage. In this, socialist plan-

ning differs fundamentally from the camouflage formulations of the "national targets" in capitalist development programmes and the unclear formulations of the planning and programming tasks in the newly-free countries. Second, the methods of socialist planning are developing towards an increasingly complete coverage of all aspects of the economy and society's life. This does not mean an absolute development of centralisation in management and planning and a single all-embracing model of the plan corresponding to this centralisation. The search is going on for ways to delimit the level of responsibility, the level of decision-making, of which planning is one component part. The formation of a hierarchical system of planning, the development of planning methods towards the creation of an interconnected complex of balance and mathematical economic systems of models, correspond to this search.

In the development of programming methods in the capitalist countries, a successive transition can be observed from attempts to apply Keynesian-type macro-models and growth models to 1) active analysis of the economy and global substantiation of the choice of methods for regulating the economy, using certain instrumental variables; 2) consideration of the macro-economic system as an interconnected multisectoral and multiresource economy, with sectors that government policy is capable of influencing directly indicated separately; 3) programming based on assessments of the possibilities for the state to influence economic development at various levels (the macro-level, the sectoral level, within individual markets), taking account both of long-term and of short-term targets. In the compilation of medium-term programmes in the capitalist countries, attempts can be traced to use all the simulation instruments available—a sort of synthesis of the methodologies of all previous means and methods. Recent years have seen the authors of capitalist programming methods focussing mainly on estimating the influence exerted by instrumental variables on other parameters of the economy, which fully corresponds to the nature of capitalist programming.

Analysis of the methods used for macro-economic programming shows that bourgeois economists have been premature in their claims to have developed multipurpose, neutral methods for compiling programmes. It should also be noted that a study of foreign experience indicates cer-

tain spheres of fruitful research connected with the further improvement of socialist planning. Of primary note here is the expediency of considering foreign experience on the interaction (interconnections) between the value and physical characteristics of economic development on the macro-level. Of practical interest also are the methods for drawing up programmes for sectors with somewhat similar conditions for the movement of the product. These include, primarily, those spheres of the economy and its individual sections where the output is sold on the market.

As for macro-economic planning methods in the newly-free countries, in contrast to the initial naive methods for assessing development prospects, attempts are now being made at a comprehensive substantiation of overall national programmes. The influence of foreign theories and practice in this field is great and often results in a wasted attempts to adapt capitalist programming methods to the conditions pertaining in the developing countries. To borrow the best and most effective methods from the rich international experience in planning will undoubtedly allow the newly-free countries to speed up the establishment of their national planning, yet the possibilities for doing so are largely determined by the socio-economic transformations taking place in the developing countries. Under certain conditions, the experience of Soviet methods for planning development during the transitional period might provide a constant source for improving the developing countries' national planning methods.



## METHODS FOR PLANNING AND PROGRAMMING THE USE OF RESOURCES

A single study can only cover the main aspects of the detailed substantiation of development plans and programmes, for these are too broad and multifaceted. The choice of subject for further investigation was thus made, first, consciously limiting the range of problems and, second, pinpointing those aspects of the further substantiation of plans and programmes that are connected with the most important resources and have been developed in socialist planning and in the programming in capitalist and developing countries. These spheres include investment activities, personnel training, the development of export production and foreign trade, regional planning and programming. In socialist planning, these aspects constitute the key sections of the national economic plans. At the same time, in the capitalist countries they are characterised by a considerable involvement of state (budget) resources and, in a certain sense, constitute the main content of overall national programmes. Developing countries with average or small populations focus considerable attention in planning on the development of export production and foreign trade. The economies of virtually all the newly-free countries are largely dependent on the world market. One most difficult problem for this group of countries is the acute shortage

of skilled personnel for the modern sectors of the economy. The developing countries are therefore making major efforts to train their own people.

## Planning and Programming of Investment

*The planning of capital investment in the USSR.* Experience of planning the economic development of the USSR has shown that investment is a major means for changing the sectoral and territorial structure of production, for creating new, progressive sectors, introducing new technology and raising labour productivity on the basis of automation and mechanisation. Investment provides for high economic growth rates and a higher standard of living in the country. In the final count, the spheres of capital investment, its flows, distribution over the country and efficiency predetermine the future economic and technological level of production. This is why such considerable attention is focussed on planning investment in the USSR.

A distinguishing feature of the investment plan is its close co-ordination with other sections of the national economic plan, embracing the entire reproduction process. This is because investment is one of the main factors increasing productive capacity. The investment plan must be provided with financial and material resources, and manpower of the necessary qualifications. The planning of material resources for investment is possible only if the production plan is taken into account. Any particular level of productive investment efficiency is backed up by investment in science and the development of new technical processes, in the education system and the training of personnel in new specialities, and in improving the skills of the work force. In turn, a change in the efficiency of each unit of investment affects both the overall national income and its distribution between accumulation and consumption.

Analysis of past consumption and the volume of investment provides the basis for determining what must be done to plan future investment. It allows planners to compare the significance of future and current tasks and thus assess future social requirements. Investment is a dependent variable, the volume, spheres and flows of which are determined in

the consolidated balance calculations of the growth in society's requirements and the possible volume of production in the plan period.

The required volume of planned investment can be schematically determined by comparing society's requirements (including individual and social ones, and also exports) with the current level of production and the expected introduction of new capacities due for commissioning, as well as possible imports. The difference between requirements and the current level of capacities determines the size of additional capacities.

The amount of investment required is decided by the efficiency of each unit of investment, i.e., expenditure on the increment in capacity. The necessary volume of investment is compared with the feasible one, which is determined according to the accumulation rate in the national income, the volume of the national income and the scale of renovation, i.e.,

$$I = aY + R,$$

where

$I$ —is capital investment;

$a$ —is the share of accumulation in the national income;

$Y$ —is the national income;

$R$ —is renovation.

The accumulation rate in the preceding period is the reference point for further calculations, but it cannot be a strictly determining indicator. Its value for the initial stage of industrialisation can be regarded as the lower limit of accumulation. The industrialisation process requires an increase in the overall share of accumulation. While the gap with the industrialised countries is closing, the problem of a large accumulation rate disappears. The way the accumulation fund is used may change likewise. A certain saturation with capital goods allows a substantial part of capital investment to be channelled into non-productive spheres but, even then, the rate of growth in the future will depend both on the efficiency of investment and its volume in production. In the USSR, the share of accumulation used for swelling fixed productive assets has been from 52 to 61 per cent in recent years, while that going

to increase material circulating assets and reserves has been from 47 to 39 per cent.

A comparison of the required volume of investment for socio-economic development with the resources from the national income and renovation makes it possible to carry out the first preliminary balancing of the plan for capital investment. This balance can be achieved mainly through changes in the accumulation rate or in the value of the capital coefficients ( $b_k$ ), since the increment in production ( $\Delta X$ ) depends on the volume of investment and its efficiency, i.e.,

$$\Delta X = \frac{aY + R}{b_k}$$

The upper limit of the accumulation rate is apparently that which maintains the previous per capita level of consumption, while the minimum corresponds to the amount of investment required to maintain a constant relationship between fixed productive assets and the population of the country (the limiting factor will be the rate of increase in the population). Otherwise, fixed capital will be eaten away and this will lead to a corresponding drop in the volume of production and the standards of living.

A description of capital coefficients is determined to a considerable extent by the current level of production and its structure, but these can change depending on the intensity of the change in the technology and structure of investment distribution. In this context, a correct idea of capital coefficients is essential, especially of those used for overall economic calculations in macro-models. If deep-running structural changes are taking place in the economy, the indicators of capital coefficients must take account of the influence exerted by sectoral characteristics of investment efficiency.

The lag between the time when investments are made and that when returns on them are received, i.e., the so-called lag in the investment effect, is of fundamental importance in the plan calculations of the economic efficiency of investment. This is particularly important if there is a sharp change in the production structure. Thus, in addition to a year-to-year comparison of output, profitability, production costs and labour productivity with investment, it is recommended that, in calculations of economic



efficiency, investment be compared, for control purposes, with the amount of output that might be obtained in the future, say in three years' time.

On the macro-economic level, not only is the value balancing of necessary and possible investment assessed, but also the extent to which investment is backed up by material resources. This is determined primarily from the correlation of existing and required capacities in sectors producing elements of fixed assets. For this purpose, data are used from the national economic balance in which the production of capital goods and of consumer goods are given separately, group A industries producing capital goods are pinpointed, and a description is given of the volume of production in the branches of engineering and the building industry the output of which constitutes the key material elements of the investment plan.

Such aggregate calculations based on macro-economic balances and containing separate ones for means of production provide the basis for further, less aggregate calculations and serve as the framework for distributing investment between sectors.

Distribution of investment by sector and branch of the national economy, as well as by region of the country, is carried out in accordance with the order in which the overall economic tasks set for the given plan period are to be fulfilled. For this purpose, the efficiency of investment in different sectors is compared. National economic efficiency criteria may not always coincide with those in a particular sector. In this sense, during the first two five-year plan periods in the USSR priority in investment was given to heavy industry, though the efficiency indicators of these sectors were not the highest at that time.

An economic approach that takes into consideration the interests of the entire country is particularly important for plan calculations of investment efficiency. For example, more intensive ore-dressing might raise production costs and reduce productivity in an individual mining and dressing plant, but it will raise labour productivity and improve all economic indicators in iron-and-steel works, because they will be working with better quality raw material. Thus, indicators of full investment, taking into account investment in kindred industries and compared for all interconnected ones, are vital for assessing investment plans,

Indicators of the economic efficiency of investment for the USSR as a whole or for Union republics differ from those used for the sector, subsector or individual enterprise. National economic indicators are calculated first of all for the volume of the country's or republic's net product. It is not always possible, however, to obtain such indicators for individual production units. The assessment of national economic investment efficiency is completed in the plan with calculation of these indicators defined as the increment in the national income and that in the final product per unit of capital investment.

The introduction of more detail into macro-economic plan calculations for capital investment by sector allows the change in the structure of social production to be taken into account in calculating investment efficiency. In this, the overall effect of introducing new materials in the main producing sectors and in adjacent ones, as well as in the consumption sphere, must be determined, for which purpose adjacent sectors must be pinpointed and related capital expenditures calculated for all the key sectors. Such calculations also presume the adoption of the most rational pattern of transport links.

The main spheres of capital investment are determined on the basis of a number of possible variants for economic development and of a comparison of the efficiency of each of them. One essential condition is a comparison of the plan's indicators with those for the previous plan period, which means that they must be comparable.

There are two possible approaches to the calculations for the spheres of investment in a sector. One consists in determining the characteristics connecting macro-models and multisectoral models with subsequent investment plans within the framework of multisectoral economic models. The second approach involves the selection of sectoral draft investment plans for inclusion in the national economic plan and their balancing within the bounds of the overall volume of investment and material resources.

The first way in which draft investment plans are made detailed consists of plan calculations based on an assessment of the volume and structure of the final product as the point of departure for planning. In the draft planning of investment for sectors, when using various modifications of intersectoral models, it should be remembered that the

most stable rates are aggregate or specific ones typical for a whole group of enterprises or widespread technical processes. The aggregate rate obtained as the weighted value of technological norms, depends on the structure of subsectors and the production processes employed. Such a standard is less suited to a different plan structure with a different combination of sectors and different territorial links. When using aggregate standards, it must be borne in mind that, if the plan provides for a transition to a new structure of production, data are required on the old and new systems of weights and structural correlations inherent in the base and the planned variant.

The use of dynamic models of the intersectoral balance requires a large volume of unified information: detail on asset standards, indicators, specific investment, and on the capital intensity of production. In order to express the diverse real investment processes more precisely, capital construction must be broken down for all sectors of the economy and investment specified by the year. This makes it possible to take account of the peculiarities of construction in individual sectors and types of production.

The second type of specification of macro-economic investment indicators consists in co-ordinating sectoral investment projects, the volume of which is established from the need to ensure the required growth in output. The volume of investment is determined for each sector by balancing and co-ordinating them with the production programme for the development of all sectors of material production, as well as the planned development of all sectors of the non-productive sphere, providing for a rise in the standard of living. This approach to drawing up a detailed plan for capital investment on the sectoral plane is used for annual and medium-term plans and is based on continuous calculations and estimates of indicators for all enterprises and organisations.

The basis for calculating the volume of the required investment for individual sectors of production is provided by balances of productive capacity, according to which productive capacity existing at the beginning of the plan period is calculated, together with the additional capacity required for the planned increment in output. Additional output can be obtained by making better use of existing productive capacity, but once such reserves have been exhaust-

ed, additional capacity can be created by investing in the expansion and modernisation of existing enterprises and the construction of new ones. Hence the clear possibility of compiling balances of productive capacity by sector, region and enterprise for planning investment.

In order to furnish enterprises, ministries and all other planning and economic bodies with systematic data on the availability of productive capacity, as a reliable basis for planning production and investment, since 1964 all Soviet enterprises in all industries have compiled balances of productive capacity as of January 1 of each year. The balance of an enterprise's productive capacity is used to determine the amount of capacity available at the beginning of the plan year on the basis of that available at the beginning of the account year and changes in it during the year (either increases or decreases). The balance of productive capacity is drawn up in enterprises and then generalised in higher organisations according to a special form.

Analysis of the loading of existing capacities is extremely important, for the results of a comparison of these capacities with the required volume of output in the sector determine the corresponding volume of investment. This is conditioned by the increment in capacities and investment per unit of capacity. The overall total requirement of all sectors for investment comprises the necessary volume of investment for increasing by specific amounts the volume of goods and services produced.

There are marked difficulties involved in calculating the need for investment from the growth in output. Since investment is a function of the production programme, the scale of production in all sectors depends substantially on investment and capital construction. This applies primarily to industries producing building materials and to the branches of engineering, as well as kindred branches of heavy industry, since their capacities also depend on the volume of investment allocated to them. It is also very difficult to estimate the need for related investment in kindred branches of production. The principle of comprehensive planning might be violated here, with consequent inaccuracies in the calculations.

In spite of these difficulties in co-ordinating investments by sector, when they are determined on the basis of the level of production, repeated calculations are



made in order to balance them. The limitations in this are the overall volume of investment obtained from macro-calculations. The initial calculations of a sector's demand for investment usually exceed possibilities. During the elaboration of the plan, the volume and spheres of investment by sector are specified once again.

Thus, the comparison of draft investment plans for each sector with the order of priority of socio-economic tasks, with indicators of national economic efficiency and the resources of the asset-forming sectors, creates an opportunity to determine the specified variant of investment by sector. This makes it possible to decide not only the sectoral structure of investment for material production and the non-productive sphere, but also their technological structure.

During the planning of investment in a sector, the variants for attaining economic targets that will provide for the greatest increase in production efficiency must be determined. For this purpose, the comparative economic efficiency is calculated of the draft variants with respect to one another and to existing enterprises with the highest investment efficiency indicators for the given volume of production.

The volumes of investment in the sector obtained from calculations on the national economic level are the initial limits on the choice of different variants for creating additional capacities. An increase in capacity is possible through an expansion and modernisation of existing enterprises and the construction of new ones. In this, the number of possible variants increases owing to various schemes for the territorial distribution of the additional capacities. The tasks involved in the comprehensive development of individual regions make the choice of the most efficient drafts even more complicated, for various factors have to be taken into account, depending on the specifics of production. These are:

- the productive capacity of the construction base and the necessary additional expenditure on increasing it;
- the presence of sources of energy and a water supply;
- the availability of manpower and the need for extra expenditure on housing and municipal facilities in connection with the possible inflow of additional manpower;
- the presence of transport links and the need for funds

for building roads and railways to connect with the existing network:

- the proximity and cheapness of raw material sources;
- the proximity of places where the consumption of the given sector's output is concentrated, and so on.

When there are several competing projects for constructing enterprises belonging to the sector or other variants for increasing capacities, investment is channelled into those that provide most efficiently for the required increase in capacity. In order to evaluate projects, the following cost-to-performance indicators are used:

- the investment pay-off period (for estimated costs);
- output per unit of fixed assets;
- specific capital investment;
- production costs per unit of output;
- output per worker.

In practice, all the diverse indicators come down to that of the sum of reduced costs, from the formula:

$$C_r = C + EK + T_{costs},$$

where  $C$  —is production costs per unit of output;

$E$  —is the sectoral investment efficiency rate;

$K$  —is specific capital investment;

$T_{costs}$  —is transport costs involved in delivering the output from the producing enterprise to the point of concentrated consumption.

The cost-to-performance substantiation of the construction projects included in the plan (new, expanded or modernised) envisages a comparison of the specific economic indicators of the given project with the standard and average sectoral values of the corresponding indicators (pay-off period, for example), as well as with those of similar advanced enterprises already in operation.

During calculations of comparative economic efficiency for selecting the most expedient investment variants, the efficiency coefficients and pay-off periods obtained for additional investment are compared with the standard values of these indicators, which are differentiated for economic sectors.

The setting of standard economic efficiency indicators for investment in the form of coefficients or pay-off periods does not imply that all projects with a lower economic

efficiency should be rejected. There may be other reasons, in particular, considerations of labour safety and improvement of its conditions, for deciding to build less efficient projects.

The consideration of several variants for increasing capacity by building new enterprises may involve the application of standards for construction efficiency, together with calculations of the overall or national economic efficiency. For selecting and substantiating the plan variant, comparative efficiency calculations can be applied.

In comparing variants that differ in the length of construction time, account is taken of the economic result of reducing or extending the time for building and commissioning the enterprise. This is calculated from the average effect that might be obtained in the given sector, on the condition that investment is used productively. If investment variants with various implementation periods are compared, the outlays of the later years are reduced to current ones.

The summing of all the selected investment projects allows the expected increase in capacity to be determined, taking into account the best efficiency indicators and other essential parameters. Such calculations provide the basis for the initial estimates of the increase in production and the investment entailed. The choice of the most efficient solutions allows planners either to review the initial limits of investment or to reassess the possibilities for increasing the output of goods and services. This new type of estimates and the solutions arising from them with respect to growth can only be made on a multisectoral, i.e., national economic level.

The investment projects selected must be co-ordinated with the available building materials, building equipment, i.e., the capacity of the building industry and the other elements for construction, and, consequently, with the capacity of sectors producing asset-forming output. If there is a discrepancy between the scale of capital construction projects and the capacity of sectors providing for the construction, it is the construction projects that must be reviewed.

*The programming of investment in the capitalist countries.* In the 60s and 70s, when major shifts took place in the structure of the economy, there was a marked in-

crease in the activities of bourgeois states in the investment sphere. By applying economic programming, the capitalist state activates its investment policy and the direct financial development of a number of economic sectors by helping to create the overall conditions for the functioning of private capital. With its national programmes, the state intervenes directly in investment processes, through which between 25 and 50 per cent of the national income is distributed. There is also an increase in direct financial "contributions" to the development of individual nationalised sectors of the economy and public sectors (the power industry, transport, road building, personnel training, and so on). Thus, in 1972 and 1975, the state's share in the overall volume of investment in the USA was 20 and 18 per cent respectively; in France it was 40 and 14 per cent, in Britain—49 and 42 per cent, and in Japan—20 and 30 per cent.

The state's investment in R and D work is still increasing. For 1970-1973, the average federal expenditure for these purposes in the USA was 20 times the 1945 level. The state's share in national financial expenditures on R and D in the USA was 55 per cent in the early 70s, while the corresponding figure for France was 70 per cent, and for Britain 51 per cent.

The main focus of state programming in the capitalist countries is investment decision-making. British economists see investment as the central part of the plan. The decisions taken today by industrialists and the government will, indeed, influence industrial and public capital for many years to come. In this context, it became necessary not only to elaborate the principles of investment policy, but also the methodological instruments for drawing up programmes at various management levels, as well as measures for implementing investment programmes.

The investment programmes drawn up by the capitalist countries consider in which spheres the financial resources of both the private and the public sector are to be concentrated. In the USA, budgetary means are used to promote the renewal of equipment and to train personnel. In Britain, France, Japan and other countries faster economic growth, structural shifts in production, greater competitiveness on the world market have been declared the goals of programming. Bourgeois economists and state



programming services provide not only the theoretical and methodological base for the work ensuing from these goals, but also its organisational form. In France, for example, the Fund for Economic and Social Development, set up in 1955, through the Council of Directors not only supervises all investment; it also establishes the order of priority for financing individual projects.

Of considerable importance in the elaboration of an overall national investment programme is analysis of the interconnections between the goals of development and the choice of investment sphere. In order to rank goals "objectively" with respect to their importance and thus determine which sectors should receive investment, bourgeois economists have developed the quantitative assessment principle with respect to the importance of development goals and the extent to which resources are in short supply. Such estimates are based on so-called accounting prices.

The concept of accounting prices in capitalist programming is built on the postulates of the distribution of resources given a competitive equilibrium. The point of departure in this is that the prices set for reproduced resources and products are of equal force for both purchaser and seller, and cannot be changed by them. The prices of all non-renewable resources are determined by the mechanism of free competition according to the law of supply and demand. Under these conditions, the idea is to select prices for resources, including for investment, that would allow the firm to maximise its revenues, and thus the overall income of the country, under an equilibrium of supply and demand for all types of resource. Theoretically, prices of this type take shape as a result of the solution of the dual linear programming problem.

Such "calculation" of prices is based mainly on subjective conceptions. In this approach, the only objective factor is the limited nature of resources. From the point of view of bourgeois economists, even the initial estimates of the significance of goals must be subjective. Yet once the influence of each investment project on the attainment of the set goals has been studied, a subjective assessment is required of the significance of these goals, for the limited nature of resources means that not all the set goals can be attained simultaneously. True, multiple iterations of the resources given initially can, to some extent, bal-

ance estimates of the significance of the goals themselves and a specific structure of investment. Yet even in this best variant, fundamental complications arise owing to the contradictions inherent in the capitalist economic system. It is not known how overall economic assessments might influence the investment decisions of the private sector, including that concerning participation in the state investment programme drawn up according to this procedure.

The accounting prices of the dual linear programming problem can be used as the basis for calculating the efficiency of the different investment programme variants. They are better than market prices in that they reflect the importance of the various types of resource for the economy. Marxist political economy has long since shown that, under capitalism, market prices definitely do not provide for the best distribution of resources. Yet it is according to these prices that all products and services are distributed in bourgeois society. The constructions considered above do not indicate how investment might be distributed optimally on the basis of accounting prices, if the real market prices diverge from them substantially.

In order to compel the entrepreneur to undertake projects that have been proved efficient on the basis of accounting prices, the state must possess sufficient resources and influential instruments to neutralise the impact of market prices on the choice of investment sphere in the private sector. For assessing the scale of such state activities in the sphere of investment decision-making, bourgeois economics has suggested that the effect of realising the investment project be divided into primary and secondary results, and the primary ones, in turn, be subdivided into direct and indirect ones. The reasoning is as follows: the direct result of investment is a growth of income for the investor; the indirect result is a growth of the income in enterprises and sectors connected with the former by vertical technical relations. The secondary result is manifested in a growth in the income of all the other sectors of the economy that are not technically connected with the first one.

These characteristics of the influence exerted by investment projects on enterprises and sectors of the economy are used by the state to determine which economic and other incentives and sanctions should be employed in order not only to ensure that the costs of the investment are

covered, but also to interest the entrepreneur in undertaking investment projects of national economic importance.

The direct "contribution" made by each investment decision can be measured by the income or volume of production or services. As for the indirect effect of implementing the project in the capitalist economy, it is very difficult to assess. After all, it involves assessing the incomes and the increase in the volume of production and services in the sectors providing raw materials and asset-forming output to the new enterprise, as well as in those other sectors whose enterprises will utilise the output of the planned one. The application of standard investment models of the input-output type for determination of the influence of each project would involve difficulties connected with capitalist private property relations. In order to assess each investment project, its influence on all links in the economy must be calculated, but this is impossible given private property, for enterprises fiercely protect their "firm's secrets" concerning its capacity. The voluntary consultations held by private business representatives do not provide exhaustive information and state economic services can make only the most approximate calculations on its basis.

The elaboration of investment programmes does not extend beyond constructions corresponding to the nature of private enterprise. The development of methods for assessing investment decisions in the framework of state programming is tending towards the introduction of elements of the system called "planning-programming-budgeting" (PPB). The comparison of alternatives and decision-making are carried out through analysis according to the cost-benefit and cost-effectiveness method.

In individual capitalist countries, the cost-benefit method is used as being the most suitable for considering the alternative investment decisions for five, ten, or even more years ahead, for this method allows different variants for attaining specific goals to be compared. It is used to estimate outlays, above all investment ones, including the cost of the resources required and the effect (benefit) from implementing a given decision.

The example of the PPB system shows that investment programmes take no account of public interests. All calculations of both expenditures and effect are made in mar-

ket prices. Even so, the dual nature of state investment programming necessitates a search for compromises between private and national economic effects. Such a compromise was allegedly found with the help of the "surplus" effect, or the increment in the producer's profits from the investment made and the income of the consumer conditioned by the drop in the price resulting from such new investment. The "social profitability" of investment is determined by the limits of the mutual benefit to producer and consumer. This indicator introduces nothing fundamentally new into the approach to measuring the efficiency of investment. Its emergence is connected with the function of social "benefit", measured by the dependence of the increment in production, given dynamic prices and marginal costs on the increment in output.

Marx in his time showed that the motive behind capitalisation of the entrepreneur's income is the pursuit of superprofits and profits, regardless of whether they are measured in marginal terms or otherwise. Bourgeois economists claim that the determination of the maximum consumption benefit (in other words, the overall economic effect from each unit of investment) is an effect for the consumer, regardless of whether it represents the state, the municipality or the private consumer. An attempt was made in France to find the consumption benefit for state investment in the extraction and distribution of natural gas and in the road network.

The overall trend towards the development of productive forces under capitalism has never been denied in Marxist political economy. Even in the third volume of *Capital* Marx wrote: "The contradiction, to put it in a very general way, consists in that the capitalist mode of production involves a tendency towards absolute development of the productive forces... while, on the other hand, its aim is to preserve the value of the existing capital and promote its self-expansion to the highest limit."<sup>1</sup>

Having established the historical tendency in the development of productive forces under capitalism, Marxist political economy showed that capitalism uses such development in the interests of large-scale private property.

<sup>1</sup> Karl Marx, *Capital*, Vol. III, Progress Publishers, Moscow, 1977, p. 249.



This constitutes the limitation on attempts to adapt the methodology for investment programming both to the needs of society and the interests of entrepreneurs.

*The experience of investment programming in the developing countries.* The way investment programmes are drawn up in the developing countries is based largely on the theory and practice of investment programming in the industrialised capitalist countries. This is understandable, for a considerable share of the new construction is carried out with the direct or indirect participation of firms from the latter countries. In the socialist-oriented countries, new enterprises and other projects are built with help from the socialist states. In these cases, the investment planning methods used in the socialist states, especially for individual projects, exert a direct influence on the methodology for drawing up investment programmes.

The compilation of an investment programme, however simple its form in the developing countries, is the point of departure for all the state's activities that these countries call economic planning. The planning of capital investment in the developing countries has evolved over the last twenty years from outlines for individual investment projects to the preparation of comprehensive investment programmes. Originally, the investment programme was just a list of projects, not well co-ordinated with one another or with the state budget and not always feasible in terms of resources. Now the aim is obviously for the investment programme to contain a selection of investment projects that is united in its target function, restraints and mutually complementary nature, and whose individual projects combined will speed up economic development. In the developing countries' planning practice, such a programme is still a rare occurrence, but the overall development of investment programming is tending in this direction. The contemporary idea of the investment programme in these countries took shape under the impact of the new methods for measuring the efficiency of investment (cost-effectiveness analysis), the methods for assessing projects, for drawing up budget estimates for the programmes (planning-programming-budgeting), network planning methods, and optimal programming.

Cost-effectiveness methods were first used by American designers and builders in the late 20s and early 30s dur-

ing the building of large-scale government hydroelectric projects, such as those in the Tennessee Valley. Supplemented by operations research and systems analysis, they are used widely to assess investment projects everywhere in the capitalist countries. Considerable efforts are made to advertise them in the developing countries, too.

The methods for assessing projects spread quite rapidly after the early 50s in countries that had won political independence, when they were confronted with the tasks of economic construction, and the governments of these countries made attempts to apply certain elements of planning. Originally, these methods were confined to assessment of individual projects, but subsequently their sphere of application broadened. They began to be used to assess complexes of projects, to assimilate the latest methods of programming, network planning, calculation of related and indirect results. This was furthered by the spread of the idea of working out budget estimates for programmes, which introduced a certain rationalisation into the chaotic and extremely imperfect investment systems in the developing countries. The draft planning of individual projects is no longer considered in isolation from the national economic programme. The programme budgets, macro-economic draft plans containing realistic investment projects, have led planners to the elaboration of comprehensive investment programmes meeting the demands of industrialisation. This is quite a major advance compared with the first steps in macro-economic planning, when attention was focussed on only general estimates of macro-values on the basis of expert assessments in the form of national accounts. The task of drawing up a comprehensive investment programme on the national scale necessitated the elaboration of comprehensive programmes of regional planning and programmes for industrial-agrarian estates, too. This made the planning services of the developing countries seek methods for the day-to-day management of investment programmes on the average sectoral and regional level, and methods for supervising their fulfilment.

The specific ways in which the methods for drawing up investment programmes are being adapted to the conditions in the developing countries can be traced from the example of the methods recommended by the UN Economic

Commission for Latin America (ECLA) and the Economic Commission for Asia and the Far East (ECAFE). The recommendations of both commissions characteristically attempt to ascertain and co-ordinate the various criteria for assessing efficiency: general economic, private, economic, and the use efficiency of individual types of resource.

Several general economic (in a certain sense national economic) criteria are used. The most widespread is the indicator of the ratio of value added to capital, which reflects the efficiency of capital on the national economic plane.

In assessing a project from the point of view of its value for the national economy, the increment in the national product per unit of the sum total of resources allocated for the project is the first priority consideration. The ECLA methodology recommends applying the criteria of national economic efficiency proposed by Hollis Chenery:

$$RMS = \frac{x + E - M_i}{K} - \frac{L + M_d + O}{K} - \frac{\eta}{K} (aB_1 + B_2),$$

where  $RMS$  — is the increment in national economic efficiency;

$K$  — is the increment in capital (investment);

$x$  — is the increase in the value of the annual product produced by the project, at market prices, after taxes, subsidies and duties have been subtracted;

$E$  — is the value added resulting from external economies;

$M_i$  — is the value of imported goods;

$L$  — is the value of manpower;

$M$  — is the value of local materials;

$O$  — is fixed assets, expenditure on management plus compensation;

$\eta$  — is the coefficient of divergence from the currency exchange rate;

$a$  — is the coefficient combining the depreciation rate and the interest on foreign loans;

$B$  — is the coefficient of the influence exerted by the costs involved in commissioning the project on the balance of payments (mean-

ing that part of investment to be paid off in foreign currency);

$B_2$  — is the coefficient of the influence exerted on the balance of payments by the costs involved in commissioning the project (incomes and outlays in currency from the commissioning and functioning of the project).

Another desire observed is to take account of direct and indirect expenditures and the results of implementing projects under the conditions pertaining in the developing countries. This is illustrated by the criteria for selecting projects as proposed by the ECLA experts. These criteria are based on coefficients of the ratio between the value added (direct and indirect) of the project and all costs (direct and indirect). The value added is calculated for the entire service life of the project, with subsidies, taxes and duties subtracted. The indicator has the following form:

$$\frac{V_a}{i} = \frac{VAP + VAP' + VAP''}{(CP/CP')^\eta},$$

where  $V_a$  — is the full value added;

$VAP$  — is the value added of the project;

$VAP'$  — is the value added including previous outlays;

$VAP''$  — is the value added including future outlays;

$CP$  — is the outlays on the project;

$CP'$  — is the outlays necessary to receive the indirect value added;

$\eta$  — is the ratio of the market price of the factors used and outlays;

$i$  — is the complex of outlays.

In contrast to integral indicators of efficiency, fractional criteria presuppose the summing of characteristics and then the ranking of the various projects accordingly. These fractional criteria are, as a rule, the following:

— an estimate of the net profitability (the correlation between the value of the output and the cost of producing it from both the private and the national economic point of view);



—an assessment of comprehensive development (analysis of the possibilities for including the new project into the existing economic system, the possible impact of the given project on other sectors);

—an assessment of economic equilibrium and growth (analysis of the impact of external and internal trends and changes);

—an assessment of the impact on the balance of payments (analysis of the positive and negative aspects of the impact exerted on the balance of payments by the commissioning of the given project);

—an assessment of the socio-economic aspects of commissioning the given project (the need for skilled personnel, the improvement or deterioration in sanitary conditions, and so on);

—an assessment of "experience and competence" (what the consequences would be of commissioning an analogous project in another place under similar conditions).

If investment projects came under one sector then, depending on the efficiency indicator and the importance of the criteria, the right projects will be chosen. When projects from different sectors are compared, the problem of sectoral priorities arises. Only on the basis of these can projects be drawn up and assessed. This gives rise to the need for priority categories to be formulated. For instance, the Latin American countries use the following order of significance of investment:

—investment in making full use of existing capacities;

—priority projects (of the long-term and short-term plans);

—prepared and feasibility-tested projects eliminating bottlenecks, with a short period for attaining "maturity", giving an increment in export revenues, cutting outlays on imports, close to optimal technological scale, thus allowing them to compete on the world market;

—labour-intensive projects;

—projects for social and cultural development.

With such an approach, however, the problem arises of establishing sectoral priorities, since they might change as the targets set in the plans are attained. Some aspects lose their priority importance as the economy develops. Experience in development programming has made the following approach workable: after the original level has

been carefully studied, the sector's ability is analysed to create new enterprises on the basis of rough expenditure estimates for the entire sector, and not for individual projects. Yet the problem of substantiating the criterion still remains unsolved (even when the potential production costs of the sector are calculated), for the interconnection between investment decisions must be taken into account.

For this reason, in the 60s many planners in the developing countries believed that, from the national economic point of view, the distribution of one type of resource between different variants was only possible using dynamic intersectoral models, i.e., taking into account not only intersectoral ties, but also the relations between stocks and flows at different times. As already noted, however, the construction of complex econometric models is complicated in these countries primarily by the lack of information. When the necessary data can be collected, an optimal solution is possible. This was demonstrated in one of the first comprehensive investment programmes compiled under the leadership of Alan S. Manne using Mexican data, according to the so-called "analysis of processes" method, i.e., a fairly detailed analysis of the possible production processes for producing individual items of unlimited composition.

Manne's model considers two key aspects of economic development: the interconnection between investment decisions in the various sectors and import substitution. It covers 12 sectors: paper production, the key chemical industries, petrochemicals, oil extraction, the production of cement, steel smelting, the production of copper, aluminium, metal casting, the production of machine tools, electricity, railways. The model contains 148 lines (products) and 446 columns (types of activity). Of the 148 products, 103 are produced in key sectors. The model is designed for a ten-year period, with the base year of 1962.

The first variant for calculation is based on one criterion: satisfaction of the exogenous demand of key sectors, given minimum currency outlays. The second variant allowed several alternative criteria to be applied: minimisation of foreign currency outlays, minimisation of full costs at market prices, minimisation of full costs at accounting prices for foreign currency and capital.

The calculations based on the first variant indicated that Mexico should initiate a broad programme for creating new capital goods branches. This recommendation met with a sceptical response from many people owing to the low absorptive capacity of the Mexican market. In the second variant, special attention was therefore focussed on analysis of 12 types of equipment: whether to produce them nationally or import them. Taking similar enterprises in the USA as their basis, the model's authors showed that the Mexican market in 1972 was sufficient only for the production of a few types of engineering output. The calculations indicated that the volume of Mexico's traditional imports for 9 sectors, i.e., the potential Mexican market, was higher than the representative scale of American enterprises. The output of three branches not included in this group (turbines and generators, ships, and train engines) should be imported or, if import substitution is decided on, production should be oriented on the regional market within the Latin American free trade zone.

Substantial difficulties in drawing up investment programmes result from the use of market prices, which do not provide for the optimal distribution of resources, as evidenced by the experience of the developing countries. It is unrealistic, however, to distribute resources optimally on the basis of accounting prices, if the actual market prices diverge considerably from them. Gunnar Myrdal wrote that "the abstract and metaphysical concept of accounting prices cannot help to solve the theoretical and practical problems facing South Asian planners. It stands out as a typical example of the pseudo-knowledge, given a learned and occasionally mathematical form, that unfortunately has formed a major part of the contribution of Western economics to the important tasks of ascertaining the facts in underdeveloped countries and creating a framework for policies designed to engender and direct development."<sup>1</sup>

In any economy where the private sector predominates, the optimum criterion is expressed through market prices. The entrepreneur will not undertake projects that do not ensure him normal profits under the given conditions, but

<sup>1</sup> Gunnar Myrdal, *Op. cit.*, p. 2039.

are economically efficient with respect to the development of the national economy as a whole. Consequently, in order to ensure that the private sector undertakes precisely such projects whose efficiency is determined in accounting prices, the government's economic policy must include a whole set of measures providing for its realisation.

### Planning Labour and Programming Personnel Training

One extremely important element in any overall national plan and economic programme is to determine what constitutes efficient utilisation of the country's labour resources. The quantity of manpower must satisfy the demand of the economy as a whole, of its various sectors, and especially those that are developing most rapidly. The planning and programming of skilled personnel training is a major precondition for raising production efficiency. Yet in countries with different systems, the tasks included in national plans and programmes in the sphere of labour resources cannot be identical.

*Labour planning in the USSR.* In national economic planning the USSR has accumulated considerable experience of resolving the problems involved in utilising manpower and training personnel. This was originally connected with the fulfilment of the complex development tasks in the transitional period. Even so, in the USSR this experience has been accumulated given the predominance of public ownership of the means of production in the leading sectors of the economy, and then planned management of the economy on a country-wide scale.

The attainment of high and stable economic growth rates depends to a considerable extent on the possibility of ensuring full employment. Hence the organic link is obvious between the plan for labour and the other sections of the plan, particularly with the production and construction programmes of the national economic plan. The multilateral dependence of the labour plan can be illustrated by the influence exerted by the volume of investment and its sectoral distribution on the efficiency with which manpower is used. A rapid increase in the volume of production and a high rate of increase in productive capaci-



ties are usually connected with a rise in the employment level. At the same time, the volume of production and the scale of capital construction depend on manpower resources, their skills and labour productivity. Under socialism, the labour plan is linked with virtually all the sections of the national economic plan: the plans for commodity turnover and socio-cultural measures, the financial aspects of the plan, the plans for introducing new technology, and so on.

Throughout the development of the Soviet national economy, the labour plan has been geared to meeting the national economy's demand for manpower and to ensuring full employment of the able-bodied population. At present, the training of skilled personnel is planned in accordance with the requirements of modern technology. In this, attention is focussed on the use of labour resources by the country's regions and on the migration of manpower between regions and from the countryside to the towns. The result of all this work on the labour plan is to provide for a steady and rapid growth of labour productivity, a rise in the numbers employed in the public economy and an improvement in the quality of personnel training, plus a better standard of living.

The socio-economic and demographic conditions determined the specific ways chosen for attaining these targets, ways that had their own specifics at different periods in the economic development of the USSR. One constant feature of planning in the USSR over the last sixty-odd years, however, has been the combination of a growth in labour productivity with an increase in the number of people employed in the national economy.

The elaboration of the labour plan is carried out in two stages: first, the use of manpower in the period preceding the plan is analysed, and then plan calculations are made for a particular period. At the first stage, the main trends and problems in the use of manpower are pinpointed—the positive and negative aspects of the use of manpower in the past, not only in the national economy as a whole, but also by sector, on the territorial plane. Demographic analysis of labour resources helps in determining both labour resources in general and manpower reserves.

Analysis of the use of labour resources in the previous period ensures that the problems that have arisen are

studied thoroughly enough and ways ascertained for solving them. This serves as the point of departure for elaborating the labour plan.

In labour planning in the USSR, two types of indicator are used. One group consists of accounting indicators used to substantiate the plan, the other of the labour plan targets.

For estimating the national economy's demand for manpower of the required professions, skills and sex and age structure, the influence exerted by technological progress on the overall economic proportions in employment and qualitative shifts in manpower is studied. This allows the scale and spheres for the training of skilled personnel and required investment in the development of general and vocational education to be determined. At the same time, the probable increment in the able-bodied population is estimated, its demographic composition, the possible level of general education and vocational training ascertained.

A balance between the demand for manpower and available labour resources is not achieved directly, but by co-ordinating the goals and tasks in the employment sphere with those of economic and socialist development. The increase in the volume of production, the increment in productive capacity, and the rise in the machine-to-worker ratio are expressed in the number of workers. The ways developed for balancing the demand for manpower and the amount available are based on the principle of interconnected solutions to problems in the employment sphere and those arising from the goals and tasks of overall economic development. The best balance is achieved when the interests of all society are taken into account in this.

For this purpose, a wide system of accounting indicators of the plan are used. These include multiple variants for the use of manpower based on different parameters of national economic development. The goal of variant calculations consists in finding the best application of manpower.

Since planning began in the USSR, a major role has been played by the balance method, which allows the plan tasks for labour to be co-ordinated at all planning levels—from the enterprise to the central planning bodies. The result of all these plan calculations is the master manpower balance, which is used to make labour resources cor-

respond to the demand for them in the national economy, to ensure the necessary proportions in the use of labour resources by economic sector and region, and a rational distribution of labour resources.

In determining the best variant of the plan, calculations are made covering various aspects of manpower use. This, in turn, allows planners to limit the number of direct plan indicators for labour to a specific minimum. The national economic plan is so constructed that a number of indicators are levers for implementing it. They are geared to regulating population migration, the drawing of manpower into new, fast-growing branches of industry and sectors of the economy. Such levers are the wage level differentiated by sector and region, the development of the network of municipal services, the rapid development of housing construction, and so on.

Elaboration of the labour plan is based on specific methodological principles, especially the provision that the development of socialist production be accompanied by full employment and a steady rise in the standard of living. In this connection, the planning of labour must proceed from a comprehensive approach to calculating the factors behind economic development and the scale of production influencing the use of labour resources. Another labour planning principle is the search for the best combination of investment and manpower utilisation; this allows the most important proportion in the distribution of manpower to be established during the formation of the decisive national economic indicators.

Assessment of the possible social consequences of the intended use of manpower in individual sectors and regions is another key methodological principle of planning labour resources.

At the present time, the variant method is used in the search for the best way to utilise labour resources. The scale and detail of the plan calculations for labour mean that only a small number of variants can be used, owing to the cumbersome calculations involved and the short time available in which to carry them out. Future improvement in the planning of labour will involve optimisation of balance calculations. Like in all national economic planning, in this sphere, too, sets of mathematical economic models are coming into increasing use for optimising

balance calculations. This began virtually with the simulation of the use of manpower in material production applying matrix models, allowing the most efficient structure of labour expenditure in the branches of production to be determined. In practice, a modification of the intersectoral balance expressed in labour characteristics is used. The model makes it possible to calculate the full labour expenditure per unit of output. This, however, is no more than the first practical step in the search for the best variant of labour expenditure in all sectors of the economy for creating a unit of a final product with a specific structure.

The swelling industrialisation of the entire economy necessitates rapid skilled personnel training, and the supply of such personnel for the economy is a key element of the plan balance calculations. Estimates of additional personnel requirements are co-ordinated with the available possibilities for training them. When there is a shortage of labour resources, the first priority is to satisfy the demand for skilled personnel in those economic sectors on which the fulfilment of the national economic development plan depends.

Calculation of the demand for skilled personnel includes analysis of the changes taking place in the professional and skill composition of the work force under the impact of technological progress and determination of the individual sectors' demand during the plan period, taking into account the trends and scale of technological progress.

The construction of models reflecting the use of experts in the period preceding that of the plan is the point of departure for subsequent calculations. Such a model permits planners to ascertain the number of experts of all specialities and at all levels available for each national economic unit for the accounting period. A comparison of accounting data with the initial estimates of the demand for specialists for the plan period indicates the increment required. This makes it possible to determine the targets for the entire system of personnel training. Since the period for training specialists does not always coincide with that of the plan, however, additional difficulties arise. This applies primarily to personnel with the highest qualifications, the need for which has to be established 8 to 10 years in advance. It is thus essential to employ two



methods for considering the factors influencing the demand for skilled labour. In the coming five-year period, the demand is established for each speciality on the basis of summary data and draft plans concerning the development of the productive and service spheres as envisaged in the five-year plan. For the more distant future, aggregate calculations are made for groups of specialities, taking into account the demand established for the period of the five-year plan and the overall trends in economic development.

*Methods for elaborating programmes for the training and use of manpower in the capitalist countries.* Under the impact of scientific and technological progress, productive forces have now reached a level at which general education and special training of most of the work force are essential for the production process.<sup>1</sup> Since the scientific and technological revolution has embraced virtually all spheres of capitalist production, highly qualified manpower is required in all sectors of the economy. The training of personnel is one of the most important problems faced by the bourgeois state, but all stages in the educational cycle must be co-ordinated if it is to be solved. Hence each private enterprise's demand for qualified manpower can only be satisfied through an overall national education and training programme, financed by the budget. In this, the contradictory nature of the capitalist system is clearly revealed. Some bourgeois researchers have had to admit that the market mechanism for distributing labour does not function satisfactorily.

The specific solutions to the problem of personnel training in the capitalist countries influence the principles and methods for state programming in this sphere. In working out programming methods, the point of departure is the combination of demographic forecasts, estimates of the demands of production, the scientific research, services and management for manpower of different qualifications with what is called education economy.

Labour resources are estimated from demographic forecasts. On the basis of information on the existing education system and its facilities for providing particular types of education, a first estimate is made of the level of

<sup>1</sup> The volume of scientific and technological research doubles every 10 to 15 years.

personnel training. The numbers of the work force, its professional and skill structure are determined by various methods, from surveys of firms down to calculations based on data for the development of production, services and management according to the macro-economic draft calculations of overall economic models. From these two types of forecast the amount by which the existing structure of the work force differs from that required can be calculated. This provides the basis for programming in the sphere of personnel training and education.

The most important of all the methods used for forecasting the professional and skill structure of the work force are the following. The traditional approach is the firm survey. This consists in preparing data on the demand of entrepreneurs for manpower in general or of a specific level of skill for a specific period. The compilers of such forecasts do not analyse changes in the sphere of technology and productivity, which is up to the firms themselves.<sup>1</sup> The forecaster simply sums the demand of firms for manpower. The drawbacks of this method are of a conceptual and a methodological nature, the latter arising from the fact that the survey is always based on samples. Since the demand for manpower is the result of a combination of different conditions and factors, the representativeness of the firms selected is quite relative and declines as the time horizon of the forecast is increased. This method is more suited to short-term forecasts not connected with long-term programmes for personnel training.

Another widespread method is extrapolation of existing trends in the employment sphere. This is used for distributing the total number of employees by sector and job for the forecast period. In this, an interconnection is often established between some economic indicator and the level of employment in a particular profession. Thus, in Holland, the point of departure for determining the demand for engineering and technical personnel is the volume of the predicted national income. In the USA, use is made of the ratio of such personnel to total employment in each sector and the level of business activity in the branch. Such forecasts are based on dynamic series characterising

<sup>1</sup> Only French government bodies ask firms to present forecast data on employment, including these on the corresponding volumes of production.

employment by sector and trade for usually not less than a 10-year term. In France, such series for up to fifty years are used. The drawbacks of this method are evident, considering the growing speed of changes in the structure of the economy and the appearance of new sectors and professions every decade. Moreover, such a method presupposes the availability of reliable statistics on employment (broken down by sector and profession) for a long term.

If such statistics are not available in the country, international comparisons are made. In such cases, the main demand for estimating employment and the training of personnel comes down to the choice of comparable development levels. Thus, in Italy, the estimate of the manpower demand in 1975 for individual sectors was determined on the assumption that labour productivity in these sectors would reach the 1960 labour productivity level in France. Such an approach is based on the idea that specific development stages are identical for all countries. This assumption is now extremely doubtful, since the world division of labour and exchange of technical processes makes it possible to base production in individual sectors on the latest technical processes and labour organisation, linked to a lesser degree to the overall level of economic development.

The so-called economic method is recognised as the most efficient instrument for forecasting employment and personnel training in the industrialised capitalist countries. This involves the following stages:

- construction of an input-output table showing intersectoral flows and levels of final demand;
- transformation of the input-output table into a matrix containing coefficients of expenditure characteristic of each sector;
- estimation of the total demand for manpower on the basis of the production level;
- construction of a matrix of sectors for types of activity, showing the distribution of total manpower requirements according to type of job.

The main difficulty involved in this approach to forecasting manpower is the shortage of information and sufficiently detailed data. This method is quite expensive and requires a considerable amount of efforts by a large group

of experts. Since the matrix of professions includes a large number of industries and types of employment, many characteristics have to be periodically reviewed to take account of new data obtained from special research.

Developed programming includes five main stages:

- the demographic forecast, including the dynamics of population growth, changes in the share of the economically active population, the influence of manpower migration, and so on;
- forecasting of the distribution of manpower by the main spheres of the economy and industries;
- forecasting of the professional and skill structure of the work force in the country as a whole and within individual sectors;
- building a model of interrelations between the professional, skill and the general educational structure of the work force;
- comparison of the estimated demand for personnel possessing particular skills and education with the actual facilities of the existing general and vocational education system and, as a result, the revelation of bottlenecks in the personnel training system.

Then decisions are made for a suitable restructuring of this system.

Forecasts of the demand for manpower and programmes for training specialists are much more difficult than are the demographic ones from which the potential manpower market is judged. The difficulties involved arise from the fact that the demand for manpower cannot be estimated on the basis of data for previous years. In the production sector, for example, the demand for manpower depends on many indicators: the volume of production, labour productivity, which is influenced, in turn, by the size of investment in new technology and production techniques, as well as other factors.

The demand for manpower in other sectors of the economy is largely determined by the volume and structure of public investment. The volume and structure of production (above all consumer goods) are meanwhile influenced by the level of employment and incomes and the structure of consumption (depending on the level of education and the nature of the work, etc.).

The development of production, qualitative changes in



manpower and the structure of consumption are all dynamic, interconnected and interdependent processes. This makes it difficult to select the approach to programming the formation of the work force. The cyclical development of the capitalist economy leaves its mark on any calculation method used, be it extrapolation of trends or standard estimates. Each method is based on assessments for some past period and so reflects only one phase in the development cycle. Up to 1967 in the USA, outlays on higher education did not correspond to the rise in the expenditure on scientific research. As a result, the deficit of scientific and technical personnel became increasingly worse. The subsequent rapid rise in these outlays at first brought a balance of the demand and supply for highly qualified personnel, and then a surplus of specialists. Thus, the influence exerted by government bodies and private firms to overcome this tendency did not bring the desired results.

In spite of the limited nature of calculation standards for data from past years and of trend extrapolation, they do provide the basis for programming in the sphere of manpower training. In order to determine the future demand for manpower in each economic sector modifications are used of the input-output system, consisting of estimates of the labour intensity coefficients in each economic branch or service sector. This set of instruments may be improved by adding the trends in productivity changes to the labour intensity coefficients. Available forecasts as a rule underestimate the productivity factor, resulting in an overstatement of the increment in employment.

Determination of the overall demand for manpower by sector is only the first step in drawing up the programme, for the professional and qualification structure of the work force in each sector is not yet clear. In order to make the transition from estimates of general demand to the qualification and professional composition, so-called "overall standardisation" of the training level is introduced, i.e., the professional and qualification category is defined. French economists have established a general gradation of professional training, according to which top administrative personnel and engineering staff must go through at least 11 years study after finishing school, administrative personnel with a technical education must go through seven years, foremen and supervisors—4 or 5 years, and skilled workers—3 or 4 years.

A staggered table is drawn up for intersectoral models, including manpower. Its horizontals consist of the professional and skill categories, while the verticals stand for the sectors. Each square of the table must give the numbers employed in the particular trade and sector of which it forms the junction. Given data on the base year of the forecast and an estimate of production development, the table is indicative of changes in the professional and sectoral structure.

In order to estimate the demand for workers, engineering and technical personnel of specific professional and skill categories on a country-wide scale, forecasts are used for each sector separately and then aggregated, which allows the drawbacks of the standard approach contained in intersectoral models to be avoided. The theoretical research carried out by Western economists recognises the need to combine the two approaches. This applies, above all, to calculation of the demand for workers in the higher and middle technical categories, owing to the rapid retooling of production with new and more sophisticated technology requiring greater skill. The most widespread approach to estimating the demand for specialists with higher and medium qualifications consists in determining the corresponding proportions between experts of the given categories and extrapolating the indicators describing their proportions for the future period. Theoretically this can be imagined as the building of a production function with a detailed isolation of the dependence of the production volume on the use of various categories of worker.

The programme for the development of the education and personnel training system is based on a comparison of employment throughout the economy and in a number of sectors, as well as in terms of professional and qualification categories at the beginning and the end of the period that the programme is in force. By establishing the dependence between investment in production and the infrastructure sectors, expenditure on education as a whole and on vocational training and retraining, the bounds of the given programme are defined.

The resulting estimates of the demand for manpower serve, as it were, as the maximum possible allocations for education and personnel training, which means the limits for financing the development of the national education and per-

sonnel training system. The standards and coefficients describing the education "economy" are used for drawing up detailed drafts for the main categories of profession and qualification.

*The specifics of planning and forecasting employment and personnel training in the developing countries.* The most important factors giving rise to difficulties in the economic growth of these countries include their acute shortage of qualified personnel in virtually all sectors. The reasons for this situation are rooted in the colonial past. The underestimation of the importance of the education and personnel training system when the developing countries' economies were initially being established resulted in serious imbalances. The demand for qualified manpower in these countries is enormous, while the unemployment level is constantly rising. The shortage of skilled workers and engineering and technical personnel is one reason for the paradox that, in spite of the tremendous need for development of modern production, the amount of idle capacities is growing in many industries. On the other hand, there is also a huge outflow of local qualified personnel, since many experts have to leave their countries in order to find jobs. The time required to train qualified personnel also influences the imbalance between the supply of and demand for experts in particular professions. All this testifies that the random principle is not suitable for solving such a complex problem as personnel training in countries that are trying to speed up their economic growth and lay the foundations for economic independence. Moreover, in the developing countries, the problems of using manpower have a clearly social content. They are connected with the scale on which experts are being trained in various professions to provide for the development of the national economy not only at present, but also in the relatively distant future.<sup>1</sup> These efforts are directly related not only to the formation of new labour and professional skills, but also to changes in the worker's psychology, attitude to work, and the development of new incentives to activity. The impor-

<sup>1</sup> According to UN experts' appraisal for 1971-80, only the industry of the developing countries will be able to absorb about 30 million new workers, which means that about 3 million people a year need to be trained for work in industry. In addition, workers, engineering, technical and other personnel already employed in industry must be retrained. Such personnel number over 100 million.

tance of this aspect of general and vocational education and upbringing derives from the fact that, for hundreds of years, colonialism has instilled the worker-and-master psychology, the cornerstone of which was disdain for constructive work. The striving of imperialist quarters to advertise the idea of the "consumer society" in the newly-free countries leads to the spread of parasitical attitudes to life. Thus, the moulding of a new, active, creative attitude to work is one of the most important tasks for the state and society's advanced strata.

The understanding of these and other aspects of the problem of training and using personnel is increasingly being expressed in attempts to include various indicators of personnel training in the national development plans, attempts to co-ordinate the development plans for the system of the education and training of experts not only with the financial aspects of the development programme, but also with the production programme. There are many difficulties here, mainly because these countries have virtually no reliable statistics on employment and the professional composition of many economic sectors, while the traditional education system is not geared to solving problems of socio-economic development. In order to overcome the tremendous backwardness of the newly-free countries, a permanent system of education and upgrading of trade skills is needed not only for new contingents of factory, office and professional workers, and so on, but also for the entire work force.

The key problems of actual planning activities in the education and training sphere are:

- the formation of reliable statistics for estimating the economy's demand for the numbers and level of professional training and for objectively assessing the possibilities of the existing education and training system;

- the rejection of the one-sided approach to the education and training sector as an autonomous system and the carrying out of all planning in this sphere as a part of overall economic planning;

- the creation of a single system for co-ordinating all types of education and personnel training since, as a rule, this training has a fragmentary financial basis, i.e., is financed from different sources.

A generalisation of the current and desirable methods for planning education is given in the UNESCO model<sup>1</sup> for



education planning, which was drawn up on the recommendation of the conference of education ministers and heads of establishments for planning the economies of the UNESCO member countries in Asia and the Far East. It was used for forecasting in the education sphere in the Arab states, too. This model covers the system of general education as such. It consists of three blocks: the first describes the contingent of students; the second—the availability of teaching staff and the demand for teachers; the third—outlays on implementing education programmes. The model is a system of interconnected standards. Its descriptive part can be illustrated by a list of expenditure indicators, such as the expenditure per student, determined from the following:

$$V_y^t = \frac{F^t}{f_y^t} + \alpha_y^t + \beta_y^t + \gamma_y^t + \delta_y^t + \varepsilon_y^t + \zeta_y^t + \eta_y^t + \theta_y^t,$$

where  $V_y^t$ —is current outlays per student;

$F^t$ —is the average wage of teachers;

$f$ —is the number of students per teacher;

$t$ —is the type of class or education stage;

$y$ —is the year;

$\alpha$ —is other outlays on maintaining the teaching staff, in contrast to direct wages, per student;

$\beta$ —is overhead expenditures (expenditures on general management) per student;

$\gamma$ —is outlays on the maintenance and current repairs of educational premises per student;

$\delta$ —is the cost of books per student;

$\varepsilon$ —is charitable expenditures (school meals and the like) per student;

$\zeta$ —is additional outlays (transportation, etc.) per student;

$\eta$ —is grants per student;

$\theta$ —is the cost of teaching aids, apart from books, per student.

Current costs for any group are equal to

$$V_y^t = v_y^t E_y^t,$$

where  $v_y^t$ —is current outlays;

$E$ —is the student intake.

<sup>1</sup> The model was used in Spain.

The overall sum of current expenditure for the entire education system is

$$V_y = (1 + i_y) \sum_t V_y^t,$$

where  $i$ —is the correlation between expenditures on central administrative bodies (which cannot be redistributed by individual aggregate groups of classes) and all other current costs.

In estimating investment, the student place is taken as the unit of measurement, according to the ratio

$$u_y^t = \chi_y^t \lambda_y^t + \psi_y^t \gamma_y^t + \xi_y^t \pi_y^t + \rho_y^t,$$

where  $u$ —is capital outlays per student place;

$\chi$ —is the cost of the land per unit area;

$\lambda$ —is the demand for land per student place;

$\psi$ —is the cost of building educational premises and general facilities per student place;

$\gamma$ —is the necessary area of premises for classes and general purposes per student place;

$\xi$ —is the cost of building laboratories and workshops per unit area;

$\pi$ —is the necessary area of laboratories and workshops per student place;

$\rho$ —is the cost of furniture and other equipment per student place.

The number of additional student places to be built is worked out from the number required to increase the student contingent, plus the number required to replace existing ones, which can be expressed as

$$D_y^t = E_{y+1}^t - (1 - x_y^t) E_y^t,$$

where  $D$ —is the number of student places to be built (for the full period of their use);

$x$ —is the number of existing student places to be replaced.

Investment for any group is equal to

$$U_y^t = u_y^t D_y^t,$$

where  $U$ —is capital outlays.

Correspondingly, the total sum of capital outlays for the system is:

$$U_y = \Sigma U_y^t.$$

The sum of current and capital expenditures for any aggregate group of classes ( $C$ —is the total sum of outlays) is equal to:

$$C_y^t = V_y^t + U_y^t,$$

and for the entire system is:

$$C_y = V_y + U_y.$$

Generalisation of the models and the forecasting of qualified manpower in practice were also undertaken by UNESCO. Accordingly, the first stage in the work is to determine the actual number of graduates in various professions and categories corresponding to the possibilities of the existing education and personnel training system. The next stage consists in adjusting the information obtained during the first stage in accordance with the so-called coefficient of participation in labour activity

$$O \leq e \leq 1.$$

The purpose of this, in the opinion of the UNESCO experts, is to take account of the real supply of new qualified personnel. The third stage involves estimating the total number of skilled specialists with a given speciality, including those already working, to which data on new personnel are added and on those withdrawing from the work force subtracted (retiring, dying, leaving work, and so on). In this, the transition of specialists from one category to another is taken into account using empirically set coefficients. Since it is possible for the number of specialists trained outside the framework of educational centres to increase, a special coefficient is also introduced for this factor. At the fourth stage, the numbers of people in a particular profession, determined as described above, are distributed between the sectors and spheres of activity using corresponding distribution coefficients (use of labour resources).

The parameters required for such calculations can be condensed into a model of the following type:

$$\Phi_y^{(t, g)} = d_y^{(t, g)} \Phi_y^{(g)}; \quad \sum_t d_y^{(t, g)} = 1,$$

$$N_y^{(t, g)} = e_y^{(t, g)} \Phi_y^{(t, g)},$$

$$M_y^{(t, g)} = S_{y-1}^{(g)} - M_{y-1}^{(t, g)} + \lambda_{y-1}^{(t, g)} M_{y-1}^{(t, g-1)} - [b_{y-1}^{(g)} + \lambda_{y-1}^{(t, g+1)}] M_{y-1}^{(t, g)} + [1 + O_y^{(t, g)}] N_y^{(t, g)},$$

$$M_y^{(t, g, \alpha)} = a_y^{(t, g, \alpha)} M_y^{(t, g)}; \quad \sum_{\alpha} a_y^{(t, g, \alpha)} = 1,$$

where  $y$ —is the year;  
 $t$ —is the field of training;  
 $g$ —is the stage (i.e., the level of the education received, characterised by its final stage);  
 $\alpha$ —is the sector of economic activity.

The variables are:

$\Phi$ —the output of the education system;  
 $N$ —fresh replenishment to the work force;  
 $M$ —the total work force;  
 $d$ —the proportion of the graduates distribution by speciality;  
 $e$ —the coefficient of participation in labour activity;  
 $S$ —the coefficient of survival, a demographic indicator;  
 $b$ —the coefficient of retirement;  
 $\lambda$ —the coefficient of advance from lower categories of manpower;  
 $O$ —the share of the work force replenishment not from educational establishments;  
 $a$ —the extent of the use of the work force.

The methods for planning education and the training of experts in the developing countries have only just begun to take shape. Even so, there are certain features common to planning practice in this sphere. The experience of the socialist countries testifies that any form of planning and each special planning model for education must be co-ordinated with the other elements of the overall economic programme. Such a model must be based on demographic forecasts. On the other hand, the number of people with a particular level of education or special training must be co-ordinated with estimates of labour resources and employment by sector and profession. The value characteristics of the



outlays on instruction and on the education and personnel training system must be co-ordinated with both the financial and the resource sections of the plans (or forecasts by corresponding sectors and spheres).

### **The Planning of Foreign Trade and Programming of the Export Sector**

At the present time, virtually all countries are involved in the world turnover of economic resources, so it is understandable that considerable interest is shown in the foreign economic aspects of plans and programmes. From the point of view of analysis of planning methods, the most interesting are those for assessing the interconnections in foreign trade and investment in the export sector, since it is the latter that determines the plan's (or programme's) impact on the scale of foreign economic operations and their efficiency for the economy as a whole.

*The methods for planning export production in the USSR.* In the USSR investment in expanding exports is calculated in accordance with the master scheme for drawing up the plan and depends on whether exports (or part of them) are an autonomous element of the plan or a function of imports. In the initial planning stages, in the sectoral ministries and USSR Gosplan, the possibilities are ascertained for increasing production in the productive capacity under construction and that being modernised at the beginning of the plan period, and by importing equipment and materials. An increase in imports must be ensured by a rise in the export of commodities. In this case, additional investment in export branches is essential. The task consists in doing this most efficiently. The efficiency of investment in export branches is assessed according to a number of indicators. The export of commodities must be profitable from the national economic point of view, i.e., require minimum current and capital expenditure on production and transportation and provide maximum currency returns.

Foreign trade must meet the national economy's demand for those goods that it is economically more profitable to purchase abroad than to produce at home. In this, the national economic expenditure on export goods sold to pay for imports must be less than the potential cost of producing import-substituting goods at home.

Each project for increasing the export of output has to be assessed taking all elements of expenditure into account. The national economic expenditure on export production, as in any other sector, is determined according to the production costs of the output, plus capital intensity, multiplied by the standard efficiency coefficient.

Since such an evaluation is given for each project in internal prices, in order to determine the extent to which it corresponds to the needs of exports the efficiency must also be measured in terms of foreign currency. For this purpose, the net currency revenue from exports per unit commodity is compared with the expenditure on producing it and transporting it to the border.

From a comparison of the relative efficiency of the export of individual items, an investment structure can be chosen in the export branches that will give an increase in the export of those goods that bring in the greatest income from their sale compared with the costs of producing and transporting them.

Since capital investment in the production of exports is made in order to increase the export revenue and expand imports on this basis, the indicators of the efficiency of exports must be co-ordinated with those for the imports conditioned by the exports.

The economic efficiency of the export of these commodities can be determined considering the efficiency of import items that are or will be bought with the currency revenue. The composition and quantity of these imports is called the import equivalent. In turn, imports must be compared with the expenditure (current and capital) on producing import substitutes at home.

The indicator of the relative efficiency of the import item  $X_n$  is defined as

$$X_n = \frac{Z_n}{B_n} \text{ (roubles/currency roubles),}$$

where  $Z_n$ —is the expenditure on domestic production of the import-substituting commodity (determined in the same way as the expenditure on the production of export goods);

$B_n$ —is the full currency outlays to pay for imports and their delivery to the border.

The indicator of relative efficiency can be used for comparing the efficiency of the export and import of commodities within the limits of commodity turnover with a single country or group of countries whose currencies are mutually convertible.

In order to compare the efficiency of expanding the capacity for exports and imports to and from various countries and in various currencies, adjustments must be made to the efficiency indicators. These are to take account of the objectively existing differences in the purchasing power of currencies received from the sale of exports and spent to purchase imports.

If the commodity is sold in a freely convertible currency, the mean weighted indicators of the relative efficiency of imports can be calculated with respect to the structure of all commodities purchased in freely convertible currency. If the commodity is sold in a closed currency, within the bounds of a single country, it is the average efficiency of importing all commodities from the given country that must be considered.

The size of the efficiency indicator for the import equivalent  $X_n$  equiv. used to specify the purchasing power of the currency received from exporting the commodity is determined as follows:

$$X_n \text{ equiv.} = \frac{Z_n \Pi_n}{B_n \Pi_n},$$

where  $\Pi_n$ —is the number of individual types of commodity included in the composition of the import-substituting goods;

$Z_n \Pi_n$ —is the summed expenditures on producing the import-substituting goods at home;

$B_n \Pi_n$ —is the summed expenditures of currency on purchasing the import-substituting goods.

As a whole, the indicators that might be applied for assessing the efficiency of each project for expanding exports (taking into account the efficiency of the import-substituting goods)— $X_{en}$ —might be represented as

$$X_{en} = X_e \cdot X_n \text{ equiv.},$$

where  $X_e$ —is the relative efficiency of exports in terms of currency.

An expansion of the volume of exports of a particular item, given limited production capacities, is not expedient if the commodity is in great demand within the home country. In this case, a comparison of the efficiency of production and consumption within the country with that of production for the foreign market is an essential condition for determining the efficiency of investment in export production.

For each new export project for investment, the limiting parameter is the efficiency of foreign trade turnover as a whole  $X_{ft}$ :

$$X_{ft} = \frac{Z_n \Pi_n}{Z_e \Pi_e},$$

where  $Z_n \Pi_n$ —is the total national economic expenditures on domestic production of the imports purchased in an individual country, group of countries, or on the production of all items imported into the country;

$Z_e \Pi_e$ —is the total national economic expenditures on the production and transportation of exports to a single country or group of countries, or of the entire volume of exports.

If the efficiency indicator turns out to be greater than unity, foreign trade within individual countries or groups of countries is economically profitable, and ways should be sought for increasing the volume of exports and imports of the corresponding items.

An increase in the capacity for the export of an individual commodity may, in a number of cases, be carried out on the condition that the production of the additional volume of this item requires comparatively greater outlays and can only be sold at reduced foreign trade prices. In this instance, the efficiency indicator for exports falls. The limits to the economic expediency of increasing the volume of exports is the requirement that the efficiency of exports (taking into account the efficiency of the import equivalent) of the marginal additional batch of goods be not less than unity.

The most rational investment projects for export production must be not only efficient, but also meet the country's internal requirements. This presupposes, first, co-ordination with the entire construction programme and, second, comprehensive balanced co-ordination of the production and



consumption of all the groups of products either directly or indirectly connected with exports and imports.

*The programming of foreign economic ties in the capitalist countries.* In the elaboration of such programmes, account is taken both of the overall goals of the state economic policy and the specific targets in the sphere of foreign economic relations. In order to consider the effect of the international division of labour, the capitalist programming of foreign trade attempts to answer the following questions: what role is played by foreign economic ties in the development of the economy; to what extent the resources available in large quantities in the country will be exchanged for foreign resources in comparatively short supply; how the structure of the foreign trade turnover will change, considering the drop in the production of some items or the appearance of new ones; which economic sectors will account for a bigger share of exports; what volume of exports and imports will accord with the structure of domestic production and consumption and with the system of international trade.

Two types of difficulty are encountered in drawing up such programmes. The foreign economic programme is based on two inadequate sections—the state programme for the development of the national economy, and extremely imprecise forecasts of the trends in the development of the world market. Whereas the imbalance of the national economy can be partially compensated through state resources and measures, the capitalist market dominates absolutely in the sphere of foreign economic relations.

In the search for a point of departure in foreign economic programming, Western economists consider the following dependencies:

- between the volumes of the flows of foreign trade and the level of such “variables” as the gross national product or elements of the final demand;

- the interconnection between short-term market trends and long-term ones in international trade, since the volume of exports and imports depends on both the internal economic situation and fluctuations in international trade;

- the dynamics of both internal and world prices, their inclusion in the draft planning of exports and imports being accompanied by serious difficulties of a principal and practical nature.

The establishment of such empirical dependencies is the

basis of construction of foreign trade models, which constitute the chief instrument for foreign economic programming, determined in quantitative indicators.

Three different types of model are used in foreign economic programming: gravitational, structural (based on the share of imports) and matrix models (using tables of the intersectoral exchange). Gravitational models take direct account of the influence exerted by the exporting country's supply and also by the importing country's demand on the structure of world trade. Work on such models is continuing along the following lines: a further breakdown of indicators by groups of product, taking account of additional and competing products; more detailed research into the factors governing the intensity of the bilateral trade links between countries; the inclusion of export prices and trade conditions among the independent variables (though they are difficult to include in gravitational models); an improvement in the methods for estimating the parameters. The last of these is necessitated by the fact that the limited number of temporal observations and the instability of certain characteristics make it difficult to establish the parameters from an analysis of temporal series and result in the need to use transverse analysis. Practice has shown that models based on the share of imports are convenient for compiling short-term programmes, but that difficulties arise in using them for medium- and long-term forecasts.

Input-output type models are designed to establish the specific connection between the indicators that determine the internal development of the economies of different countries, whose characteristics depend simultaneously on the situation in a number of countries. With the development of science and technology, these variables of an international character acquire greater significance in mapping out the economic growth of the country. This is particularly true of small countries. In order to describe the interconnection between the two types of variable, complex models are required. Owing to the vast sphere of application, they are huge in scale, which entails problems of comprehensive calculations (the breakdown into submodels, definition of the algorithms, fusing of iterative processes, and so on). Although substantial successes have been scored in processing large-scale models by computer, difficulties still arise in working with them, such as in precisely defining the spheres for which

the models are designed or in ascertaining the type of models that can be used both in medium-term and in long-term programming. Finally, depending on the possibility to analyse and forecast such factors as scientific and technological progress, the development of integration in world economy, the striving to step up the efficiency of foreign trade, as well as the pursuit of a trade policy by each country in line with these factors, it would be advisable to forecast the structures of international trade over a longer period of time by using the matrices of delta-coefficients.

In individual capitalist countries, the programming of foreign trade takes specific forms. Thus, the Japanese "medium-term plan" formulated goals for the economy's development from 1964 to 1968, such as a rise in the competitiveness of Japanese goods and a growth in the volume of foreign trade under the increasingly fierce competition on the world markets and the liberalisation of foreign trade. The "plan" also took account of the fact that the equilibrium of the balance of payments limits economic growth. Foreign economic ties were a key problem in Japan's programming in the late 60s and early 70s. In order to determine the pattern of net exports for a long time ahead and to obtain a long-term picture of the balance of payments, the task of studying exports and imports was set during the elaboration of long-term models. In these models, exports are conditioned by the operation of both internal and external factors. The results obtained indicate that the dependence of exports is greater on world trade than on the growth in labour productivity.

In medium-term models, exports are divided into two parts: the export of goods and that of services. The second part is considered to be exogenous. The export of goods is explained by the level of world trade in real terms (the income effect) and by changes in relative prices (the price effect). In estimating imports, account was taken of the fact that industrial materials and fuel are competing imports, in contrast to other imported resources, which were not considered as competing ones. In the intersectoral and integrated models used in drawing up Japan's medium-term economic plans, considerable attention was also focussed on the problem of foreign economic ties.

The latest improvements to the British Cambridge model indicate a thorough study of the foreign trade factor. Government research organisations are attempting to employ a

more flexible forecasting model to take account of the changes in the machinery of foreign and internal price formation that will occur under the impact of the devaluation of the pound sterling and the currencies of other countries. To this end, the previous assumptions that exports are exogenous values, that non-competing imports are co-ordinated with the equations for production by means of fixed coefficients, and that competing imports are a linear function of the total sum of expenditures on a particular type of import, all had to be revised. The need arose during the elaboration of the new variant to associate specific types of exports and imports with relative prices (both internal and external), as well as with the income level and the volume of production. In the further improvement of the model, the task was set of adjusting, within its bounds, any unfavourable balance of trade through changes in internal prices relative to the corresponding external prices. All this required the introduction of a large number of non-linear dependencies, which made the model considerably more complex economically and complicated the mathematical interpretation of it.

The new model consists of two parts: the "turnover of quantities" and the "turnover of prices". The procedure for calculating imports and exports in this variant of the model considers that the volume of imports must be determined not only by the production and consumption demand, but also by the comparative competitiveness of imported and home-made goods. The British economists believe that the future volume of imports could be estimated fairly precisely, if such factors were taken into account as customs regulation of import and currency restrictions and other state regulation measures.

The volume of exports, in contrast to that of imports, is primarily determined not by the level of national production, but by the state of the world market, so the factor taken as determining the movement of exports is usually the volume and structure of foreign production, rather than the dynamics of national production. This involves a different set of calculation methods. Most import forecasts do not take trends in the world market into specific account and bring the domestic production factor to the fore, while the situation with most export forecasts is the opposite.

*The programming of foreign trade in the developing countries.* To a considerable extent, the methods used by the de-



veloping countries to elaborate plans and programmes for the foreign trade sphere are borrowed from the capitalist ones. The essence of the recommendations made by Western experts consists in the need to develop the use of economic models tracing the various interconnections of the sector producing goods for the home market and that producing exports. Such a division is intended to distinguish between the two types of interconnections, since the increase in exports depends not only on the scale of national capacities, but also on the development of other countries' economies. The internal demand is determined by the volume of domestic consumption and internal investment. Common to many approaches to foreign trade questions coming from the industrialised capitalist countries is the assertion that "since exports are relatively more difficult to control, the best starting point for planning with this model [singling out the export sector—*Auth.*] is to estimate the probable rate of development of exports. Future exports depend primarily on the growth of foreign incomes and the income elasticity of the foreign demand for export commodities."<sup>1</sup>

This interpretation of the way foreign trade and development programmes for the export sector in the newly-free countries depend on the economic situation in the industrialised capitalist countries best illustrates the purpose of the recommendations made by bourgeois experts. Such models clearly reveal an attempt to consider the developing countries as the raw material outskirts of the developed capitalist countries.

Events in the 1970s have shown something different—that the industrialised capitalist countries are dependent on the deliveries of raw materials, and especially oil, from the developing ones. The co-ordinated actions of the latter on the world market resulted in a sharp rise in export prices, which led to a 25 per cent increase in their annual revenues between 1971 and 1973. This provided for an increase in the overall active balance of trade of the developing countries from 2,200 million dollars in 1972 to 11,800 million dollars in 1973, and to 32,700 million in 1976. In the wake of the crude oil prices, however, came a substantial increase in the prices paid by the developing countries for their im-

ports of capital equipment: between 1970 and 1975, the prices for each unit of equipment doubled.

Any country whose economy is oriented on exports is naturally largely dependent on the sales markets but, as already noted, this market is not beyond the control of the developing countries. The problem is not only to increase export revenues, but also to change the structure of imports. The sharp increase in the incomes of the oil-exporting countries has shown the particular goals of foreign economic programmes. It is indicative that the countries with a socialist orientation spend most of the new export revenues from oil on obtaining equipment and other types of output for modernising agriculture and for industrialisation. The capitalist-oriented oil-exporting countries send this export revenue abroad, to be invested in the capitalist countries in buying shares, credits, and so on. The ruling circles of some developing countries are spending the extra funds not on developing the national economy, but on investing in the economies of the industrialised capitalist countries.

These fundamental assessments are important in the context of the attempts to impose on the developing countries foreign trade programming methods that will direct their development according to the laws of the market economy. These calculations are based on the idea of comparative costs and comparative benefits. The application of these principles for countries with only small differences in their level of development allows the effect of participation in the international division of labour to be assessed for individual types of production. When the differences in development level are great, however, comparative assessments lose their meaning, since here they compare incomparable things. The efficiency of export and import programmes must obviously be assessed, in this case, for the long term, taking primary account of national needs.

The elaboration of programmes for the foreign economic relations of the developing countries is made more difficult by the unprecedented growth of their foreign indebtedness, which forces the planning services of these countries to adapt the foreign trade model to these unfavourable circumstances. The first attempts in this direction were initiated by M. A. Rahman, working on a two-sector model including indicators of the country's foreign debt. The model's aim is to determine the development of the two sectors (tra-

<sup>1</sup> *Programming Techniques for Economic Development. With Special Reference to Asia and the Far East*, Bangkok, 1960, p. 25.

ditional and contemporary) in such a way as to switch over to so-called self-sustained growth. This presupposes stricter limitations on the volume of imports and, what is more important, on their composition. This is because the model's target function consists in a search for the scale of accumulation and import substitution that will make it possible not only to create the economic basis for development, relying on internal resources, but also to pay off the foreign debt.

This line in the formation of foreign economic relations programming in the developing countries demonstrates the interconnection between the plans and programmes for the development of the national economy and the foreign trade programmes. Not by chance are models containing both internal and external restrictions being used increasingly in choosing the projects for the production of exports. Attempts have been made to use accounting prices to construct such programmes. On the whole, the development of programming methods for foreign trade comes down to optimising the choice of investment projects for the production of exports and the development of the production of import substitutes. The difficulties in implementing programmes based on accounting prices were noted during the description of planning and programming of investment. In the given case, these difficulties become even greater, since the implementation of export-import programmes depends on the conditions on the world market with its world, not accounting prices.

### Regional Planning and Programming

The planning and programming of the use of natural resources, the accumulated national wealth, the use of developed and undeveloped territories, and the labour skills of the population are best traced in the sections of planning and programming practice called "regional planning" and "regional programming". These are the closest to calculation of the resources available in particular regions of the country. The infinite variety of the characteristics describing their use means that not all details of the methods applied in elaborating the regional aspects of plans and programmes for development can be covered here. Only the specifics of the methods employed under different social conditions will be outlined.

*The planning of the location of production in the USSR.*  
This is what the complex of problems and methods for planning the development of the national economy on the regional or territorial plane are called. The nature of the methods of regional planning is determined by the fact that a more rational location of production provides for economies of social labour on a country-wide scale, for the comprehensive development of regions, their most suitable specialisation, and a further levelling up of the economic development of the country's regions. The national economic, rather than purely local, approach determines both the actual procedure for drawing up plans for the location of production and the methods used. Since the very first years of the socialist state, the questions of territorial planning in the USSR have been approached from the angle of overall state tasks and the long term.<sup>1</sup> These included a rational distribution of productive forces, plans for the development of the Union republics and economic regions. The interconnection between this aspect of planning and its other elements conditions the unity of the planning process on the sectoral and territorial plane. The characteristics of the development of each sector of the national economy and industry determining the specifics of resource use in particular regions serve as the point of departure for planning production location. Existing practice makes it possible to isolate three interconnected stages in elaboration of the main trends in the location of productive forces. First, the chief schemes for the development and location of production are determined by sector. Then schemes are drawn up for the development and location of production by republic and economic region. The combining of these two types of draft plan allows a master (general) scheme to be elaborated for the location of productive forces of the USSR in the long term. This, in turn, serves as the basis for constructing the territorial characteristics of the five-year plans for the development of the national economy, long-term draft plans and medium-term plans for the development of sectors, republics and economic regions in the country. The formalised scheme of the sectoral and territorial structure of the economy is expressed in a modification of the model of the intersectoral balance, with

<sup>1</sup> The first long-term development plan—GOELRO—was drawn up on the detailed regional plane, indicating key economic centres.



a differentiation of its main characteristics by region of production and the use of goods and services.

The specifics of the methods used to work out the regional aspects of sectoral plans are closely connected with the characteristics of the technical processes, labour intensity, the material intensity and goals of production, as well as the availability of transport facilities for hauling the output. Models and methods for preparing such draft plans vary, since the combination of the aforementioned development characteristics of sectors (grouping of sectors from the regional angle is called "locational classification of sectors") is also diverse. Common to all these methods is the application of balance calculations for production and use of output, pinpointing the regions of production and consumption, territorial balances of construction organisations' capacity, schemes for the development of industrial and agricultural centres, and regional planning methods.

The development planning methods for republics and economic regions include the entire system for substantiating draft plans—from the efficiency indicators of social production and the master schemes for the location of productive forces to cost-to-performance calculations for specific projects. It is important to stress that the set of methods used is geared to preparing comprehensive plans for the development of republics and regions. The need for such regional plans has given rise to the elaboration of regional intersectoral balances for the production and distribution of output. In such balances, there is information not only on the internal interconnections between the branches of the given complex, but also those between imported and exported output.

Regional planning, like national economic planning in general, first arose in the USSR. Elaboration of the regional aspects of the national economic plan for the development of the socialist economy made possible a fundamentally new approach to the location of productive forces as a key national economic problem. In this, socialist planning differs from the bourgeois theory and practice of the location of production. Under the conditions of capitalism, decisions are made mainly with respect to the location of individual enterprises or the development of individual regions. The acuteness of the social and economic contradictions of capitalism in recent years is responsible for the interest

shown in solving national economic problems in interconnection with regional ones, which necessitated the development of a suitable set of instruments.

*The methods of regional programming in the capitalist countries.* These took shape under the considerable impact of socialist regional planning, which involves the idea and practice of regionalisation. The first ever work of this type was carried out under the GOELRO plan, which was based on assessments of the territorial division of labour and production for individual regions and zones, taking suitable account of the specifics of their economies, natural, raw material and energy resources and the national complexes that had taken shape in them over the centuries. Considerable influence was also exerted by the implementation in Soviet planning of the idea of comprehensive development of the economic region, since this gives rise to a desire to determine complex systems, to study and analyse them and the interaction between them, to seek the support points on the basis of which policy, investment and management can channel not only the components of the system, but also all combinations in general, towards the desired goal. The need for co-ordinated development of the productive forces of the country's regions, for comprehensive development of each economic region, is dictated by the social nature of production under the conditions of modern capitalism. Yet this need is in complete contradiction with the motives for decision-making throughout the private sector. The criterion of national efficiency gives way to commercial efficiency, if the latter brings the entrepreneur greater profits.

The nature of the regional programming methods used in the capitalist countries is determined not only by these factors. A considerable influence is exerted on their choice by the very subject of the regional programming. The state bodies consider primarily certain aspects of the development of individual regions, rather than the problem of locating productive forces in general. Although attempts are made to approach this problem from the angle of the country-wide interests,<sup>1</sup> it is still predominantly the government decisions that are made with respect to the future development of in-

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<sup>1</sup> An example of such attempts is the regional aspect of government development programmes in France (see Chapter 2).

dividual regions. It should be stressed, moreover, that this aspect of state activities does not so much assist the market mechanism, as aggravates the competition between entrepreneurs fighting for state subsidies, privileges and contracts. Analysis of regional programming in the developed capitalist countries has allowed Soviet economists to draw the following conclusion concerning these activities of the bourgeois state: that even the simplest forms of this type of planning are, under the capitalist conditions, clearly conflicting in nature, which comes to the fore in the form of grandiose speculation in land and real estate, in the swelling of initial cost estimates for the measures taken, in the low efficiency of programmes for the planning and development of territories.

The difficulty in solving regional problems by programming explains current trends in the development of the instruments used in drawing up government programmes in this sphere. A desire is observed to synthesise traditional methods with mathematical economic simulation. Schematically, the procedure for elaborating regional programmes can be presented in the following way:

—Stage 1—spatial analysis of the key factors in the economy (natural resources, the location of production, population distribution, and so on) and the spatial “distribution” of development problems; this stage allows planners to formulate the goals of regional development, taking into account the overall targets of the government programme, as well as regional possibilities and problems, for which purpose descriptive models of the territory, based on matrices of geographical data, are used;

—Stage 2—the attaching of the development goals to specific territorial centres or boundaries; this stage in the work is called “regionalisation”;

—Stage 3—research according to assessments of the development prospects for individual regions (regional forecasts); such forecasts as a rule constitute a combination of disaggregation of national forecasts and extrapolation of trends in certain parameters for a particular region;

—Stage 4—when the spatial characteristics for interregional interconnections are defined on the basis of research substantiating the location of individual enterprises, taking account of their interconnections by element of costs and regions of sales market.

A broader interpretation of interregional interaction is a new idea in programming. Its realisation encounters problems of a principal and informational nature. Attempts in this direction are a result of the growing interest in projects for constructing comprehensive complexes of the infrastructure financed from the budget. Research is also going on into local and partial optimisation in the course of regional studies. Of certain interest in the practical work on general optimisation problems, taking account of territorial factors, is the model of the partial intersectoral balance with characteristics of sectors according to their degree of mobility (level of independence on location).<sup>1</sup>

The two different lines of the research into and solution of regional development problems (under the socialist and capitalist economic systems, respectively) influence the formation of regional planning in the developing countries.

*The location of the productive forces in the developing countries.* The deep regional imbalances in both the economic and the social respect determine the goals of regional planning in the developing countries, this becoming an increasingly important part of overall national planning activities. The tasks of the regional policies of these countries include, above all, a rise in their backward regions, the evening out of economic development levels of regions, consolidation (a deepening of the interconnections between regions) of the national economy, and regulation of the development of urbanisation and employment in the agrarian regions. The fulfilment of these tasks in the developing countries is achieved using regional policies based on the information provided by regional development programmes. These policies rest, as a rule, on the idea of development of the infrastructure and modern industrial, as well as agricultural estates. These estates are the development spheres that influence all adjacent ones, as well as regions with particular interconnections with the estates. The overall task of regional policy is thus to seek ways of industrialising on the territorial plane. In the regional planning and programming practice of the developing countries, use is made of the concept of factors of distribution, development spheres, the economic region and the industrial (or indus-

<sup>1</sup> Experts estimate that the difference between the developed and the undeveloped regions of individual newly-free countries may be twentyfold.



trial-agrarian) estate. Regional planners in these countries employ theories and methods borrowed from both the socialist and the capitalist countries.

The specific methods by which the developing countries draw up regional plans and programmes can be described by the following more or less typical group of such methods, in accordance with the stages in the development of economic programming in general.

In the initial stage of the establishment of state programming, regionalisation (regional differentiation) methods of overall national programmes were used, i.e., macro-economic indicators broken down for individual regions. These extremely simple methods were ineffective but essential for the very beginning of the work in this sphere.

The solution of actual problems of industrialisation and a number of social problems necessitated the elaboration of development programmes for specific regions, and this led to the spread of development programming on the regional level. As experience and information are accumulated, these activities by the planning bodies are increasingly transformed into the elaboration of regional development programmes that include all the new projects being created in the region, regardless of the way they are financed, their scale and significance. This is still non-comprehensive development programming, but it does indicate a desire to determine certain interconnections within and between regions. In the developing countries, no real attempts have been made to draw up master schemes for the location of productive forces. Even so, it should be noted that, in the development of regional programming in these countries, they have accumulated experience in the use of specific methods. These include the fairly widespread use of regional statistics and other sources of economic information on the regional level, the regionalisation of territories, the use of such methods as that of exceptions, development potentials, priorities, cartography, and the locational classification of sectors. Mathematical economic models are used extremely rarely, not so much because they are complicated, but because of the lack of the required statistical base.

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Thus, the determination of the amount of investment, the criteria for investment distribution and assessment of its

efficiency depend, in the planning and programming of capital construction, on the historical conditions of production, on the level of economic development of the country and the social transformations that have been accomplished. The dominant socio-economic relations, the presence or absence of exploitative classes, the commercialisation of the national economy, the influence exerted by the state on the scale of accumulation, all determine the overall possible scale of investment for expanding production and the increase in the non-productive fixed assets of the country, and the expansion of the production base of the dominant form of property.

The methods used in investment programming in the capitalist countries reflect the contradictory nature of capitalism itself and of state programming. The desire to combine in efficiency estimates both the needs of the whole national economy and the interests of entrepreneurs has produced no results. The macro-economic programming instruments for investment have proved to be alien to the principles governing decision-making within the firm.

In the developing countries, the following factors influence the formation of investment planning methods. At a low level of development of productive forces, the problem of the correlation between the increase in the size and the sphere of investment and the required rise in consumption is extremely acute. In order to lay the basis for a highly industrialised economy in the form of heavy industry, the power industry, transport and other branches of the infrastructure, for a long time major investment has to be made for no immediate return. After a certain period, the returns from the capacities created grow and grow, as reflected in the rise in labour productivity in all sectors of the economy, in the growth of the production of consumer goods, in the increase in the possibilities for improving living and working conditions, and in the greater exploitation of natural resources.

The methods for drawing up labour plans in the USSR testify to the advantages of all-embracing socialist planning, which makes it possible to achieve a high degree of co-ordination and use efficiency of all types of resource. In the capitalist countries, the methods of training personnel reflect two fundamentally contradictory processes—the need to use methods for determining the scale and structure of staff training for the country as a whole (and, consequently, the

solution of overall national problems), and the possibility of using exclusively the information reflecting links among spontaneous processes. These factors account for the divergence between the possibilities of the education and staff training programmes and the requirements for personnel during the development of the economy.

The planning methods used in this sphere in the developing countries are conditioned by the fact that it is impossible here to raise the number of qualified personnel for all the major spheres of the economy at once. Thus, the need arises for both medium- and long-term plans and forecasts of the development of the education and personnel training system. The inexpediency of only short-term (annual) programmes in this field is self-evident for the conditions pertaining in the developing countries. The experience of the socialist countries indicates that the plans for staff training must be detailed and co-ordinated with other sections of the development plan, rather than overall ones (geared to the maximum number of specialists in general), i.e., they must have clearly defined targets and, what is no less important, be provided with the necessary resources. The limited nature of resources predetermines the procedure for attaining the socio-economic development targets and, consequently, strict observance of the plans for the education and training of personnel according to this procedure.

The methods for planning foreign economic ties, like those for planning investment in the development of export-oriented sectors, are a function of the sector's place in the economy of the country, as well as of the level of development of the economy itself. If the country has some type of resource that is of interest to foreign buyers then, investing in the sectors producing these resources, account has to be taken of the benefit derived from the international division of labour. Such a general approach does not signify that this criterion is applicable in all cases. For countries with insufficiently developed productive forces and not possessing capacity to produce modern capital goods or other industrial items competing with imported material resources, it is usually foreign markets that provide the basis for the initial industrial development. The share of imported equipment in the total sum of gross internal capital investment is 30 to 40 per cent in such countries, and substantially higher in some of them.

In the socialist countries, the planning of foreign trade constitutes an integral part of the national economic plan, both during assessment of the country's needs met through imports of equipment, raw and other materials and consumer goods, and while determining the volume and structure of exports. An increase in the share of finished output in exports confronts planners with the task of further improving the substantiation of plans for the development of export production in interconnection with all the components and sections of the national economic plan. The methods used in the USSR to assess the efficiency of foreign trade constitute the first step in this direction.

In the capitalist countries, the programmes for foreign trade rely on two unequal elements: the state programme for the use of part of the national resources and the extremely indeterminate forecasts of the trends in the development of the world economy and the world market. In this connection, in many instances, planning of foreign economic ties involves the use of models containing elements of correlation dependency.

In the developing countries' practice, the programming of foreign economic ties involves methods based on the cost-benefit analysis. In recent years, the development of the foreign trade programming methods has been increasingly geared to optimising export-oriented investment programmes.

Regional planning and programming methods are determined by different approaches to co-ordinating the complex sectoral and territorial structure of the economy. In the USSR, the national economic approach to the problems involved in locating productive forces ensures that the tasks and criteria for locating them are co-ordinated with the tasks of regional development. The evening out of levels of development and raising of the social efficiency of production are ways of improving the welfare of people throughout the country. The instruments used for this purpose in elaborating the regional aspect of the plan are called on to ensure the attainment of national economic targets and the more efficient use of each region's resources. Under capitalist conditions, the location of production is primarily concerned with the maximum benefit for the entrepreneur. At the same time, the development of the region as a territorial element of the whole national economy cannot proceed only in the



direction dictated by the interests of private property holders. The state tries to make the problems of regional development less acute by using a whole set of means that do not correspond to the criteria and methods decision-making, designed generally to further the interests of the entrepreneurs. Thus, the location of production and the development of regions take place in a very contradictory form.

The internal social contradictions of the developing countries, the dominance of foreign capital, and especially the international corporations, exert an influence on the formation of regional programmes in the developing countries. Objective conditions are forcing the governments of these countries to actively tackle the problems involved in the location of productive forces and the development of backward regions. The methods they use in their regional policy and planning reflect, however, the actual potential of the countries under their difficult social and economic conditions.

Chapter

## 4

### PLAN FULFILMENT SUPERVISION IN THE SOCIALIST COUNTRIES AND REGULATION OF THE CAPITALIST ECONOMY

The implementation of plans and programmes is the focus at which all the key problems of state economic programming are concentrated and in which the advantages of socialist planning are clearly visible. While the planning and programming process is somewhat autonomous in the technical sense, the possibilities for implementing the plans and programmes, the methods for fulfilling them, and supervision over their fulfilment are determined by socio-economic conditions. Even in the initial period of its development, the presence of the state and private sectors in the Soviet economy raised the problem of combining centralised management with economic regulation. A combination of the regulating functions of the market and administrative methods had to be found that would correspond to the nature of the social changes taking place in the country. The rapid rate of the social changes in a brief period following the 1917 October Revolution presupposed a flexible and constantly changing combination of economic methods of centralised management of the national economy as the boundaries of state, co-operative and collective-farm property expanded.

The first attempts to use planning methods raised the question of finding a suitable way for managing the economy, for supervising the fulfilment of the development plans. From this it becomes clear that the range of problems involved in implementing plans and programmes was so wide

that they could only be considered in the framework of special research, so in this work we are confining ourselves to considering only some elements of the instruments and machinery for supervising the implementation of development plans and programmes.

### Supervision of Plan Fulfilment in the USSR

The introduction of planning principles into a multistructured economy encountered a number of very serious problems. Thus, the problem of the planned economy turned out to be closely interlinked with that of the budget economy, financing, especially prices and the correlation of prices which, in turn, are connected with the problems of introducing profit-and-loss accounting.

To solve these problems, at that time the following system of planning and regulation was created. USSR Gosplan (State Planning Committee) was set up in 1921 under the Council of Labour and Defence—the highest administrative body of the USSR. Paragraph 1 of the Provisions on Gosplan ran: "Gosplan's purpose is to draw up the long-term plan for the national economy on the basis of the plan for electrification. Gosplan shall elaborate both the production plan for the state economy and the plan for regulating the national economy as a whole." The State Planning Committee relied in its work on the planning commissions of the people's commissariats (sectoral ministries) and regional planning commissions.

Under the Supreme Council of National Economy (SCNE) were established the Industrial Planning Commission, the Planning Commission for State Construction, the Planning Commission for Electrification, the Planning Commission for Fuel, as well as planning commissions under the People's Commissariat for Finances and the People's Commissariat for Foreign Trade. In addition to Gosplan, under the Council of Labour and Defence there was a Commission for Internal Trade (later the People's Commissariat for Internal Trade). Within the framework of the SCNE, two special departments were set up: the Central Board for State Industry and the Chief Economic Board (CEB). In the SCNE's activities, a clear dividing line was drawn between the func-

tions of management and regulation. The CEB dealt with the regulation of industry, both privately- and state-owned. This was carried out by the promulgation of obligatory resolutions, general and special supervision over industry (for instance, supervision of the mining industry), and the elaboration of the general aspects of industrial policy. Overall management was implemented with respect to the republican supreme councils of national economy and state enterprises under their jurisdiction. Moreover, questions of regulating the development of the national economy by economic methods were the concern of the banks (their activities were co-ordinated by a special committee of banks), of syndicates, raw material societies, export bureaux, commodity exchanges and associations of them (councils of the congresses of commercial trade, industry, and so on).

In a multistructured economy like that of the Soviet Union during the 20s, there was an unprecedented increase in the importance of assessment and supervision from the angle of the national economic prospects for the entire range of economic affairs—both of the current plan for the state sector and of all economic measures. The conditions of the Soviet economy in the 20s engendered the world's first all-embracing network of national economic supervision—the system of control figures and the system of market observations.

The elaboration of the first sectoral annual plans and the long-term plan for electrification of the country (the GOELRO plan) confronted the economic bodies with the task of building up a system of supervision of plan fulfilment on a country-wide scale. It was clear that the set of indicators for supervision must correspond to the set of plan indicators for the country and for individual sectors and regions. This system had to rely on the indicators of the annual plan, which was, in effect, a day-to-day one. The Commissariat for Finances' reference figures for the coming budget provided the impulse for the emergence of a new organisational form of plan supervision on the scale of the whole economy. In 1925, the idea arose within Gosplan of drawing up annual control figures for the entire national economy of the USSR.

From the angle of the implementation of plans, the only way that it could be established, whether the control figures were correct or incorrect, was on the basis of regular observation and careful study of the current economic situa-



tion, and day-to-day supervision by the sectoral commissariats over the construction and commissioning of the most important projects in each sector. Thus, planning work (control figures and sectoral plans) was supplemented by assessments of the market economic situation.<sup>1</sup>

The results of the supervision of the fulfilment of control figures and analysis of the data of economic situation reviews furnished the basis for economic decision-making and economic operations in the subsequent period. The need to test whether the control figures were being fulfilled and to regulate the market led to the creation of special bodies that studied the economic situation by investigating the growth of the sectors of the economy and on the basis of balance calculations. For this purpose, a Gosplan Economic Situation Council was set up with a Bureau at its head. In 1924, regional economic situation bodies and later corresponding sections in many departments were established with a common programme of work.

Considerable attention in the establishment of the provincial network was focussed on the choice of candidates and their qualifications. By 1924, there were already 55 centres of the USSR Gosplan data-feeding planning network. The telegrams from correspondents, which were processed in a couple of days by the Gosplan section for the trading situation and prices, provided some of the most important material for determining the monthly and quarterly regional economic situation.

After focussing attention on the dynamics of the national economy of the USSR, these bodies observed the economic processes according to the dynamic curves of six groups of economic situation indicators (the process was reflected in relatively comparable values). The mean monthly state of the economy in 1923/24 was taken as the point of departure. The analysis covered the key characteristics of the economy's development, including the following groups:

- the output of large-scale industry (5 indicators);
- agriculture (1 indicator);
- freight turnover (1 indicator);
- the turnover of the Moscow commodity exchange and 70 provincial exchanges (4 indicators);

<sup>1</sup> Reviews of the economic situation were made every month and for each quarter of the economic year.

- exports and imports (2 indicators);
- the movement of the mass of money, credits, deposits, current accounts and price indices (6 indicators).

Three units of measurement were employed: prewar prices, the commodity rouble and the golden rouble.

The question of how the economic situation data were assessed deserves particular attention. The relevant bodies of Gosplan had not only to describe the state of the economy, but also give a correct explanation of it, since information on the economic situation was useless for the planning bodies unless it was assessed. At the same time, the assessment had to include a forecast, recommendations and guidelines for specific measures. Such an understanding of the essence of assessments virtually coincides with today's understanding of the decision-making processes.

As the Soviet economy was restored and the country entered a new period in its development—that of the structural shifts connected with industrialisation and co-operation of agriculture—it became increasingly obvious that the existing organisational forms of supervision and methods of accounting with respect to the economic situation did not suit the new planning tasks. As early as 1930, the Congress of Planners of the Russian Federation stated that, in connection with the new tasks, analysis of the economic situation was required on the following planes: plan fulfilment; the territorial distribution of economic and cultural processes; assessment of the efficiency of technical modernisation in various economic sectors; assessment of the efficiency of new organisational measures taken by the Soviet authorities to speed up and consolidate socialist construction; socio-economic structural shifts.

In accordance with all this, the type of economic situation characteristics had to be changed: assessments of the economic situation had to lean towards a vigorous reaction to the interests, needs and demands of the government bodies; the phenomena and processes had to be analysed and criticised in comparison with the plan targets; economic situation analysis had to lead to practical flexible planning measures geared to weakening and eliminating the negative phenomena and processes in the economy and cultural development or to a further development of new positive trends.

The new tasks required a restructuring of the very foundations of the network of economic situation accounting, but the need for this had arisen even earlier, when the first national economic guidelines—control figures—were elaborated. At the end of 1926, representatives of USSR Gosplan and the Central Statistical Board (CSB) outlined a number of measures for improving state statistics. A draft resolution of the Council of Labour and Defence was drawn up envisaging the establishment of a division of labour between the Central Statistical Board and Gosplan, according to which the former would be responsible for economic situation appraisal and statistical data collection, while Gosplan would carry out the overall economic assessment of the indicators.

The accelerated industrialisation of the economy necessitated, however, a radical solution to the problem of the information needed for assessing the course of plan fulfilment. In 1930, the CSB was reformed into the Central Board for National Economic Accounting of USSR Gosplan and thus, for a certain period, was fully geared to work on accounting and assessing plan fulfilment. As a result, the range of indicators covered increased and their qualitative composition changed.

Up to the 30s, indirect supervision predominated, together with economic management methods and systems of economic observations, whereas from the beginning of the first five-year plan period the increased complexity of the tasks undertaken by planning, the large construction programme, and the shortage of resources accounted for the transition to direct methods of supervision. Thus, for example, by a government resolution on the balance for ferrous metals for 1929/30, the SCNE was empowered to exercise "strict control" over the supply of metals to consumers. The Stal (Steel) production association could trace stocks of metals held by consumers, and not only suspend current supply of metals to those which held excess stocks, but also take back any surplus and redistribute it among other consumers. Moreover, the Stal association could take metal from some consumers even if their stocks were not above the norm, if this proved necessary to stave off a breakdown in production and construction. All these factors led to the introduction of more detailed accounting systems—monthly and quarterly

accounts, daily reports from the "industrialisation front" (the daily production of metals, extraction of coal, oil, loading of railway cargoes, and so on). These elements of supervision in the Soviet multistructured economy were supplemented by departmental and special supervision bodies.

Under the specific conditions of the 20s, however, the formation of a system of supervision of plan fulfilment could not proceed entirely from the requirements of the planned system of management as such. In the 20s, the world's first ramified system of workers' and peasants' inspection was set up in the USSR, its main task being the theoretical and practical study of management, the implementation of the necessary measures for realising management techniques, verification of the activities of all state and public establishments and enterprises, fulfilment of individual special tasks and commissions from higher bodies, as well as supervision and observation of the planned implementation of the resolutions and decisions of these bodies.

The state supervision bodies set up after the Revolution were transformed in 1922-23 from inspection bodies carrying out periodical studies into a single one responsible for the systematic and regular investigation of the commanding and key points in economic construction and state management.

One of the most remarkable features of the socialist restructuring of the Soviet economy in the 20s and 30s was the increase in the initiative shown by the working people and the trade unions. This was originally manifested in modest proposals on individual aspects of the enterprise's production activities, but later grew into higher forms of socialist emulation, from shock work to the setting of targets even higher than those contained in the production plan. These new target figures compelled the planning and management bodies to change the control figures and rearrange the production plans to provide for an increase in output, a greater reduction in production costs, and so on. The Council of People's Commissars of the USSR adopted a special resolution in 1929 obliging state and economic bodies to rapidly implement all of the workers' proposals taken up by the administration. On agreement with the trade unions, these proposals were divided into



proposals for immediate implementation and ones that had to be taken into account in the production and financial plan (with the implementation date indicated).

In enterprises, shop-floor production conferences of workers supervised the fulfilment of the production tasks in each section and of the production plan by the individual workshop and the enterprise as a whole, and discussed the results every month and quarter. These conferences were empowered to set up temporary supervisory brigades to supervise the fulfilment of the workers' proposals and could raise the question of bringing people guilty of not fulfilling the adopted proposals to account.

The present nature of plan fulfilment supervision in the USSR is increasingly conditioned by the use of economic incentives to economic development. The current system envisages that the indicators for plan fulfilment increasingly become the criterion for income distribution and play the role of incentives to plan fulfilment, this being in the interests of both the state and the enterprise itself.

On the enterprise level, the key tasks of the planning and management bodies are an overall growth of production and the sale of output, the renewal and expansion of production and improvement in the quality of goods and services; a rise in the efficiency of production on the basis of lower costs; an improvement in the use of productive assets and a rise in labour productivity; rational use of financial resources and mobilisation of production reserves.

The fulfilment and overfulfilment of the new targets provides the basis for leaving a sum, growing in absolute terms, in the hands of the enterprise to pay the workers' wages, for housing and cultural development of the enterprise's work force, and for improving working conditions in the enterprise. Thus the plan indicators and plan fulfilment assessments are interlinked.

The flexible correlation of centralised management and local initiative now makes it possible to supervise the development of such a dynamic system as the Soviet economy. Prices, credit, and economic efficiency indicators act as signals as to how the entire national economy must react to information on plan fulfilment, what has to be done to bring the economic system into equilibrium. The three-channelled supervision system that now exists

corresponds exactly to such an understanding of the essence of plan fulfilment supervision.

Supervision of plan fulfilment from production and marketing to consumption envisages both supervision of the financial and value aspects of plan fulfilment, carried out by the financial and banking system, and supervision of the physical aspect of the plan, carried out by the sectoral departments and the state statistics system. This second aspect is the responsibility of two state services because, first, the plan has both a sectoral and a territorial aspect, the latter being beyond the control of sectoral departments, and, second, the central government establishments (the USSR Council of Ministers, Gosplans of the USSR and of the Union republics) must have information services that are independent of the sectoral departments and are subordinate to the government. Moreover, a rapidly operating information system is required for data coming from enterprises to bodies that can take urgent measures to ensure that the enterprise fulfils its plan. Such a system can only operate efficiently within the framework of sectoral management. These factors also determine the three channels through which information on plan fulfilment is received: state statistics, departmental supervision and planning bodies.

As in elaborating the plan, the system of accounting information concerning plan fulfilment takes the form of a pyramid, the base of which consists of indicators of the work of economic associations, trusts, chief administrations and other middle-level managing bodies; then come indicators for sectors, in the form of indicators of the activities of ministries and departments of Union and republican significance. This information can be presented either in a generalised sectoral form, as intersectoral balances for comprehensive sectors of the economy, or for the entire economy as tables of intersectoral ties. At the summit of the information pyramid on the development of the economy and plan fulfilment is the accounting balance of the national economy.

The unity of the systems of plan and accounting information does not mean that they are identical. Accounting information is provided in a more detailed form, as required for substantiation of the plan itself and for detailed analysis of the reasons for its under- or over-fulfilment. Thus,

for example, the annual plan for the production of commodities is determined for more than 50 industries, while the analogous accounting data cover over 200. About 40,000 material balances of products are drawn up in a centralised way, whereas annual accounts cover in practice almost all types of production in physical terms. At the same time, an expansion of the limits of the enterprise's independence results in some of the indicators, planned on the enterprise level, becoming no more than accounting ones, though even these indicators are included in the system of accounts. The introduction of modern computer technology into planning and management, and the use, in particular, of optimal planning methods presuppose several approaches to the formulation of the problem of plan fulfilment verification. The first is an automated system of information and verification. The second involves attempts to create contemporary generalised national economic indicators and balance schemes.

The all-embracing character of the economic information required for planning and supervision purposes leads, as the economy develops, to an increasing complexity of the organisation of the information services, longer periods for elaborating substantiated assessments and recommendations in the course of plan fulfilment, and difficulties in seeking the best variants of economic decisions. These difficulties are due to the economic information, its processing and analysis having developed previously on the basis of the simplest accounting system. This is why, in recent years, a considerable amount of work has been done in the USSR on building an automated system of economic information and verification of plan fulfilment, as an element in improving economic management.

The technical basis of such a system is becoming the state network of computer centres, which will collect, store, process and transmit economic information through a single automated system of communications. The creation of such a system not only mechanises the actual collection and processing of economic information; it also provides for better planning and management as a result of the introduction of methods for optimising planning and day-to-day decision-making.

### The Instruments for Attaining the Goals of Capitalist Programming

The nature of indicative planning in the capitalist states predetermines real difficulties for the government economic services in supervising the course of development programme fulfilment. The fact that the state plans and programmes are not obligatory for the entire private sector explains the lack of success in creating any general economic system of supervision fundamentally different from the usual statistical information gathered by the state economic bodies. Even so, it should be noted that the transition to programming has led to an expansion of the statistical information and the formation of a set of measures for gearing the economy towards the attainment of the set goals. This has made it possible to pick out a number of economic parameters attracting special attention on the part of the state economic apparatus.

The overall assessment of the statistical information for programming purposes has already been considered. The most noteworthy thing involved is an attempt to collect systematised economic data not only on the financial results of business activities, but also on the movement of real resources—output, the increment in capacity, intersectoral flows, the interconnections between various social sectors of the economy on both the financial and physical planes.

Major changes in statistical information resulting from the demand of programming come down to the development of a system of national accounts and the preparation of accounting input-output tables. There is a trend towards integration of these two information flows into a mutually connected system. The distinguishing feature of this trend in the development of economic statistics consists in the fact that it provides a fairly detailed picture of the dynamics of production and the interaction of its various elements. This is naturally a step forward compared with the so-called fiscal statistics intended to supply the government bodies with information on incomes for the purpose of diverting part of them into the state budget.

The development of statistical economic information is only an essential element in the formation of the machinery for state intervention in the economy. The bour-



geois state attempts to bring together various instruments of state influence into a single system of measures and institutions for goal-oriented (perspective) regulation. The search for a combination of economic, social and political measures, designed to operate over various periods of time, has become one element of programming used by the capitalist states in pursuit of their declared goals and programmes. Their purposeful use gives state-monopoly regulation new features: it is now constant in nature and tries to embrace all economic development. The traditional means are supplemented by new ones applied with respect to individual programmes.

The complex of instruments of regulation in the capitalist countries includes a whole series of methods of direct and indirect influence on the economy. An example of such a system of key methods is a list of the state measures used by the British Government in its economic policy under the National Plan for 1965-70.

The state measures for regulating economic development that were used to implement the British programme can be divided into two groups: those for direct and those for indirect influence. The first group covers instruments designed to regulate the use of public property and resources. It includes supervision over the financial operations of government enterprises, their structure and economic expediency, the setting of prices and tariffs, production tasks for the enterprises of the public sector. Direct control is exercised over government investment in expanding the fixed capital of state enterprises, in housing and road construction, investment in developing the sphere of education and the health service. Also among this group of measures are various types of state purchase (military and other orders), and various types of payment (above all for social insurance). British economists also include certain types of supervision among the direct influence measures: currency control, the restricted export of capital, control over wages, prices and dividends, consumer credit, the issue of paper money, licences for the construction and location of enterprises, the purchase of blocks of shares or whole enterprises. Finally, R and D carried out in government research centres also falls into the group of spheres coming under direct influence.

The second group of measures includes state regulation

instruments that do not have a direct effect with respect to fulfilling the tasks of the state programme. Yet, in the opinion of bourgeois economists, they are geared to encouraging entrepreneurs to act in accordance with government guidelines or to creating generally favourable conditions for improving the business situation. Such indirect measures include various instruments of credit policy: adjustments in the bank rate, state credit for developing forward industries, the concentration and centralisation of capital, rationalisation of backward industries, insurance of export operations. There are also different types of budget subsidy for expanding forward industries, carrying out R and D, developing agriculture, backward industries and regions, and training management staff. Other indirect measures are direct and indirect taxes and import restrictions, the activities of government establishments in improving the efficiency of private production through standardisation, rationalisation, recommendations on introducing scientific and technological achievements and retraining workers in government vocational training centres.

This is not, of course, a universal list of measures. Each country applies its own specific set of measures but, even so, a general pattern can be established. The main question clarified during the selection of measures is the correlation between the direct and indirect ones for state intervention and between coercive and incentive measures. In countries with a high level of industrial development and considerable programming experience (France, Italy, Japan, and Britain), the main accent is made not on coercive methods of intervention, but on economic levers and incentives. At a medium and low level of economic development and in the initial stages of state programming there is a tendency to apply stricter methods, the main role being played by those connected with raising the growth rate of production during the upswing in the capitalist cycle. "Stricter" state regulation is primarily characteristic of transitional periods. As soon as the extraordinary situation disappears, the strict regulation measures (state control of prices and wages, state capital investment, the establishment of programmes for sectoral production, and so on) are replaced by more flexible forms of indirect intervention. Since the new spheres of state management are expanding (such as the military, envi-

ronmental protection, the creation of branches of the infrastructure, education, and the health service), the role of administrative methods may grow in the future. The practical introduction of the specific programme approach, a component of which is the close interconnection between the programme goals and the means for attaining them, can also promote the use of such methods. The compilation of long-term estimates of budget expenditures within the planning-programming-budgeting system for the purpose of attaining specific goals of state overall national programmes is one attempt to provide for this interconnection. It is geared to utilising systems analysis for improving the efficiency of state policy and government decision-making on the various levels, in accordance with the given political lines. As a result, the budget must be drawn up and implemented not by administrative category (such as the financial plans of individual ministries) and not by category of expenditure (the "functional plan"), but be oriented on the final result.

The so-called structural policy must also be picked out among the measures providing for the development programmes. In many capitalist countries, economic programming theoreticians claim that the "structural effect", together with technological progress, is becoming an independent factor behind economic development, for the scientific and technological revolution dictates the need not only for an expansion of the production base of capitalism, but also a radical remaking of its economic structure. In the opinion of Western economists, satisfactory economic and political development in the future will only be possible, given an increase in the mobility of factors of production. For these to be used with maximum efficiency, they believe that the competition mechanism must be supplemented by an active structural policy. For this purpose, they propose a complex of measures for relocating productive forces, improving the agrarian structure, staff training, regional and sectoral regulation of investment, as well as measures in the sphere of urban construction and the infrastructure.

The nature of the approach to implementing structural policy can be seen from the example of programming in the countries of Western Europe. The Principles of Structural Policy drawn up in the Federal Republic of Germa-

ny in early 1969 presuppose a co-ordination of the main, previously isolated measures for rationalising the economic structure. The annual "structural report" of the Federal Government, together with the list of measures of structural policy for the past year, also contains a programme of action for the coming three to five years. The FRG's structural policy includes a sectoral one promoting structural changes in the various sectors, a regional and structural policy with respect to individual firms and enterprises in order to speed up the concentration and centralisation of industry.

On the whole, the capitalist countries stress not the creation of a control machinery for the realisation of development programmes, but the elaboration of measures of economic policy, the development of a machinery for long-term regulation on the macro-economic level, whatever specific form it may take. This machinery includes investment and centralised government influence on the labour market, stimulation of scientific and technological progress and regulation of regional development. From the entire system of influence exerted by the bourgeois state, the so-called "comprehensive specific purpose programmes" should be mentioned in particular. The implementation of such support programmes (the development of science, space research, environmental protection, the fuel and energy sphere, the location of productive forces, and so on) is conditioned by the expansion of the scope of capitalist programming. This sphere deserves special study because of the growth of comprehensive planning in the USSR.

Even in those measures that, in form, can be called "overall national" (regional policy, the programme for the training and upgrading of personnel, stimulation of scientific and technological progress, and so on) their anti-popular essence is revealed. By furthering the improvement in the production base and in the educational level of manpower, these measures ultimately serve the interests of the monopolies and are geared to consolidating the capitalist system.

Since it is designed for this purpose, state stimulation exerts an influence on the economic and social life of the capitalist countries. Economic growth during the upswing period is, indeed, speeded up by state programming. During such phases of the cycle, in countries with a developed



programming system, the indicators of the government programmes draw closer to the actual growth indicators. The goals of the first French national plan were only 49 per cent realised, the GDP growth envisaged by the third plan was attained in full, and the annual growth outlined in the fourth coincided with the actual one. The next plan, the fifth, was nearly fulfilled. This apparent efficiency of programming is explained, however, only by the fact that it served the interests of monopoly capital. The growth of the economy above all provided an opportunity for increasing private investment, while the government policy was oriented on encouraging monopoly investment and exports at the expense of domestic consumption by the broad population. From 1965 to 1972 in France, the share of the incomes of wage workers in the national income fell from 62.2 to 61.2 per cent, while the number of wage worker families grew from 54.3 to 58.8 per cent.

The expansion in the scale of capital and the limits to the exploitation of the working people has come up against the constant antagonist of capitalist growth—the drop in consumption. In the initial phase of the cycle, capitalist programming is called on to justify the idea of “zero growth” and a further drop in the working people’s share in the national income. Not by chance did the authors of the sixth French national plan and its political supporters declare that, during a crisis, there should be not a 6.5 per cent annual industrial growth, but development “without growth”, that national sovereignty should be restricted, the influence of the international monopolies increased and the standard of living of the working people reduced. Instead of an increase in the volume of industrial production, in 1975 there was an 8.9 per cent drop. Under these conditions, the state switches its incomes policy instruments into top gear, as a means for implementing the long-term strategy of the bourgeoisie, and as a way of disguising the anti-popular goals of programming. The idea of this policy is to introduce a centralised state system of control over the movement of wages, to use a drop in the working people’s real incomes to get out of the crisis. In two years (1974-75), the cost of living in France rose by 27 per cent. Not without reason do bourgeois economists declare that incomes policy is potentially effective and worth developing.

Analysis of the development of state capitalist programming shows that attempts to apply elements of overall national management of the development processes come up against the insurmountable barriers of private property. Production relations of capitalism force state programming into the procrustean bed of private enterprise interests. The content and methods of programming in general are subordinated to the interests of the monopolies and serve as a means for mobilising national resources for a further expansion of monopoly capital.

Attempts to use state-monopoly regulation to smooth over the impact of the capitalist reproduction cycle, to increase the economic growth rate in individual periods, and to improve the efficiency of production, do not rid capitalism of the crisis, inflation, idle productive capacity and unemployment. In 1975, the gross national product of the developed capitalist countries combined fell by 4.3 per cent, while inflation was on the increase. In the same year, the army of completely unemployed topped the 16 million mark. The volume of industrial production dropped in Japan by 10.4 per cent, in Italy by 9.2 per cent, in the FRG by 6.2 per cent, and for the capitalist countries combined by 11.6 per cent. The entire capitalist world found itself, as a result of the crisis, thrown back to the 1971-72 level. In spite of the revival of business activity in 1976-77, the scale of unemployment in the ten most developed capitalist countries has remained virtually the same for the entire period, at over 13 million people.

Capitalist reality testifies to the impossibility for state-monopoly capitalism to realise a planned, balanced economy and attain an equilibrium on the national scale, and thus at least partially stabilise economic development.

### The Organisation of Economic Programme Fulfilment in the Newly-Free Countries

The main aspects of the implementation of the developing countries’ plans and programmes can be divided into two groups of problems. First, there are the socio-economic conditions determining the possibility, in principle, of

implementing the plans. Second, there are the problems of the practical implementation of programmes under the specific conditions of the underdeveloped economy of a former colony. The first group of problems is sufficiently widely discussed and can be reduced to some general principles. The UN Committee for Development Planning noted in the report at its third session that partially the development strategy is not co-ordinated with the existing economic and social conditions. In other words, the newly-free countries' desire to develop more rapidly does not comply with the nature and depth of the socio-economic measures carried out by them.

In the opinion of the 3rd conference of Asian planners, the success of planning depends primarily on the successful implementation of agricultural plans, since from 50 to 90 per cent of the national product is produced in the agricultural sphere. Today, however, in spite of the reforms adopted and carried out by many newly-free countries, the existing agrarian relations in them still do not create pre-conditions for the successful implementation of development plans. In the agricultures of the Asian, North African, Middle Eastern, and Latin American countries, semi-feudal survivals are still strong, which not only hold back the development of productive forces, but in practice also act as a barrier to state control.

In the majority of newly-free countries, the public sector, as the material base for planning, accounts for an insignificant share in the economy. Although the public sector acts as the basis for the development of overall national planning, it is only an island in the sea of private capitalist, petty-commodity and semi-subsistence economies. Only state regulation measures of no great significance in the overall management of the economy are applied to the private sector. It must be remembered, too, that there is a considerable uncontrollable part of the economy—foreign capital, which still occupies very strong and, in some countries or sectors, dominating positions. These are no more than some of the socio-economic conditions under which the plan is implemented, but they are the main ones.

Although the developing countries differ in area, level of development, economic structure, and so on, one can identify more or less common factors holding back the realisation

of economic programmes and concentrate attention on the questions arbitrarily called the "mechanism for plan fulfilment". Some bourgeois economists consider that under-fulfilment of the plans is mostly explained by bad planning. Others call for a decisive improvement in plan fulfilment. The experts of the UN Economic Commission for Africa noted in the early 60s that economic planning in Africa was not satisfactorily implemented in even the most rudimentary form. Initially, the UN Economic Commission for Asia and the Far East considered that, although most Asian countries drew up plans carefully enough for them to be realistic and co-ordinated, they were implemented only partially, slowly and in many cases inefficiently.

This is a result of the still widespread opinion among the planners of the developing countries that the stages in the compilation and implementation of the plan are isolated and independent of one another. This often results in the planners not focussing enough on the choice of measures required to ensure fulfilment of the set tasks, and explains why most plans contain more or less detailed information on what needs to be done, but are very sketchy on such problems as how to do this and who should do it. Take, for example, the National Economic Commission of Nigeria, which began to develop the entire set of measures for fulfilling the 1962-68 plan after the programme had been adopted. The same applies to the Indian five-year plans where, according to the eminent Indian economist D. R. Gadgil, the most obvious defect is the almost complete lack of any techniques for fulfilling them. In other words, plans, like other official documents, do not set out any economic or financial policy or administrative and organisational measures for fulfilling them; often there are not even any guidelines on co-ordinating the development of private enterprise, changes in financing, credit policy, etc. The weak organisational and co-ordination aspect of planning, as one of the main reasons for non-fulfilment of plans, tells on the entire planning process.

Researchers from the socialist countries have often pointed to the unrealistic nature of the plans as one of the reasons for their not being fulfilled. This manifests itself right in the initial planning stages. Sometimes insuffi-



ciently justified provisions are adopted that all investment projects must be completed on time and all available resources used efficiently. This leads to the establishment of unrealistic rates for the utilisation of raw and other materials, energy, and so on, and to an exaggeration of the expected volume of productive capacity.

An underestimation of the initial investment expenditure also leads to the elaboration of unrealistic plans. The rates for these outlays are understated to convince the central bodies of the need for and economic profitability of individual projects. Once the central planning body has approved such projects, the initial estimates are reviewed and considerably raised by the compilers. In such cases, the plan cannot be realised since there is no internal equilibrium between its key characteristics.

An assessment of whether the plan is realistic obviously consists in determining the amount of risk involved in its fulfilment, which can be reduced if reserves are provided for, especially in sectors and branches where the degree of indeterminacy is high. Reserves of such resources as fuel, limited raw materials and, of course, currency, are of major significance.

Given the multiparty systems in the majority of developing countries, the co-ordination of administrative activities often assumes a clearly political hue. Compilation of the plan is conditioned by the political line elaborated for a particular period but, in practice, divergences from the previously proposed platform are frequent.

It should be noted that the existing forms for co-ordinating planning activities are characterised by the complexity of the administrative procedure, which is one of the reasons for non-fulfilment of the plan.

Thus, so far there is no organic interconnection between the elaboration of plan targets and the measures for implementing them. This testifies to the lack of a complex of administrative and organisational measures as an efficient means for speeding up economic development.

It should also be noted that the majority of plans and programmes are compiled by the central planning bodies, whose associates are not always able to assess the regulating impact of all the economic levers and administrative measures on the process of plan task fulfilment. In a number of developing countries, a paradoxical situation often

arises in which the measures taken in the tax, price formation and credit policy spheres hinder rather than further attainment of the planned results.

Thus, it is very urgent for the newly-free countries today to ensure that the economic levers chosen for implementing the development programmes are compatible and co-ordinated. This means that their direct impact on the course of economic development must be cumulative, not contradictory.

The transition to the principles of planned economic management requires a restructuring of the work of many links in the administrative apparatus. The tasks of improving this apparatus and raising its efficiency must be an essential and integral part of the economic planning process. At the present time, the administrative machinery in most developing countries does not correspond to what is required for exercising a planning influence. The administrative structure set up during the times of colonial dependence was geared, in the main, to a range of commitments connected with juridical and legal matters. The government bodies were thus unable to immediately resolve the problems arising from the new conditions when attempts were made to plan the management of economic and social development. In such a situation, there has to be a constant search for the most efficient ways of modernising the administrative apparatus, and the rights and duties of its various subdivisions must be precisely defined with respect to the new tasks. In this, the administrative apparatus directly concerned with the process of economic development should not be considered in isolation. It is an essential and integral part of the overall state administration system.

The formation of a central administrative apparatus does not, however, exhaust the problems involved in organisational transformations. The achievement of the optimal division of functions between the central planning body and regional planning establishments is considered by the economists of the developing countries as one of the key organisational problems in the improvement of planning. In general, the proposals are that the regional plans be implemented by the central planning organisation within the framework of the national plan. This creates an opportunity for further specification of regional

programmes by local planning bodies that are better acquainted with local conditions and production resources. As a consequence, the regional programmes are adjusted by the central planning bodies and implemented by local ones. In this case, the central bodies offer advice to the latter. The developing countries' planners believe that maximum centralisation of planning does not give positive results, since contacts with regional establishments are then made more difficult and artificially restricted. It is only justified in an emergency, when regional planning bodies are just being set up.

All this testifies that, without consistent socio-economic transformation, no successful implementation of plans can be expected and, consequently, neither can economic backwardness be overcome and economic development take place without crises. The conditions providing the social basis for the organisation of plan and programme fulfilment are a result of the correlation of class forces, the trends and forms of the class struggle in each individual developing country at specific stages in its development.

The social conditions under which the plans are implemented, the scale of the public sector and the state's access to sufficient material and financial resources for exercising overall planned management are, undoubtedly, of major significance. At the same time, there are problems the successful solution of which furthers the fulfilment of programmes even at the given level of socio-economic development in each country that is setting out on independent development.

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The choice of one system of measures or another for ensuring the realisation of development plans and programmes in the socialist, capitalist and developing countries is determined by a whole complex of factors—differences in social structure, the forms of property, the nature of planning and programming, the tasks of the plans and programmes. Characteristic of socialism is the development of a system of control and stimulation of plan fulfilment geared to seeking out the best combination of the interests of society and individual work collectives. This system is developing and improving, but the overall tasks remain

unchanged—to find methods for realising plans that ensure the consistent development of the economy in order to satisfy the needs of the national economy as a whole, enterprises and each individual member of socialist society.

The formation of a system of measures for the realisation of state programmes in the developed capitalist countries is tending towards various combinations of instruments for direct and indirect state intervention in the economy, with the indirect measures predominating. For the realisation of programmes, the state tries to "purchase" the co-operation of firms in such programmes, using mainly incentives for this purpose. Thus, the system of measures for encouraging the private sector is becoming an instrument by which the monopolies redistribute state resources in their own interests.

In the newly-free countries, the formation of a machinery for the implementation of development programmes is complicated by a number of factors, especially the presence of backward forms of social organisation of society, the underdeveloped state of modern forms of management, and the acute shortage of qualified personnel. A major role is also played by the lack of co-ordination between the process of plan elaboration and plan implementation.



## CONCLUSION

In summing up our research it should be stressed that, under modern conditions of social and economic world development, there is a need for more profound scientific analysis of balanced and planned development. This is engendered both by the further development of the planning of the prospects for socialist society and the attempts of the capitalist countries to apply a set of programming instruments to cure the ills of the bourgeois system. This need is felt particularly acutely when considering the problems of state planning and programming in the developing countries, where the choice of a future course of development is in some way connected with attempts to apply specific methods of state intervention in the economy.

Theoretical and methodological analysis of the set of questions involved in the use of planning instruments under various social conditions shows that one of the main directions in critical comparative analysis is the study of the methods used to draw up economic development plans and programmes. Analysis of the planning and programming methodology is inseparable from ascertainment of the fundamental differences in the content and goals of national economic planning in socialist countries and state programming in the capitalist countries. This interrelationship allows the conclusion to be drawn that no special, third form of planning activity by the state is possible

in the developing countries and the evolution to be traced of the initial forms of "planning" in such countries either in the direction of socialist planning or that of capitalist programming.

At the same time, a comparison of the content of the state's activities in the planning and programming sphere under different social conditions shows that the concept of the planned, balanced economy requires further development, one way being to analyse it as the general form of development of the socialist economy.

In describing the differences between the methods used to elaborate national economic plans for the socialist economy and the national programmes in the capitalist countries, mention must also be made of certain common features of a formal nature in the procedure for planning and programming on the macro-economic level, while noting the fundamental differences in the methodological principles. In addition to the differences in the theoretical and methodological aspects, there are also other differences resulting from the goals of socialist planning and capitalist programming. The latter uses a restricted set of instruments within the bounds of the limited state-controlled resources to assist the market mechanism. The result is a development of methods for elaborating programmes with elements of functional interrelationships between the parts and the whole. Socialist planning, which acts as a general form of management, has an incomparably wider choice of means and methods at its disposal for drawing up the plan and for implementing it. Even so, this distinguishing feature of capitalist programming could be studied further in order to evaluate the possibilities for applying certain methods to planning and management where such interrelationships exist under socialism, too.

A critical comparison of certain specific methods also allows the limited nature of capitalist programming methods, and the broad opportunities for developing the methods of socialist planning to be assessed and the usefulness established of studying other countries' experience for improving certain specific planning methods.

A parallel consideration of planning under socialist conditions, programming under capitalism, and the attempts at planning in the newly-free countries shows the complexity of introducing elements of planning into the man-

agement of the multistructured economy's development, to establish the contradictory nature of this process and its weak points. At the same time, such an analysis prompts the conclusion that planning and its methodology in the developing countries have become the centre of a fierce class struggle both within these countries and internationally. Thus, it is important not only to study this phenomenon thoroughly, but also for the socialist countries to give theoretical and practical assistance to the developing states in their efforts to initiate planning. Account should also be taken in this of the fact that the methods of planned management cannot remain an unchanging and constant instrument. They must correspond to the main trends in the changes taking place in the developing countries. As Leonid Brezhnev noted in the Central Committee's report to the 25th CPSU Congress, this means the "shifting of the centre of gravity in industrial development to the state sector, abolition of feudal landownership, nationalisation of foreign enterprises to assure the young states' effective sovereignty over their national resources, and formation of their own personnel".<sup>1</sup>

The methods of planned management must not only correspond to the level of development of the economy, but also change in response to the specific tasks and problems that arise. Planning methods are instruments for solving economic problems in economic practice.

The actual process of plan implementation in the newly-free countries raises many very urgent development problems, both economic and social. These are the questions of the sources of finance and, above all, of their structure—the size of taxes on enterprise profits, taxes on the incomes of peasants and workers, foreign loans and internal accumulation; of how to ensure proportional development and a balance of financial and material resources or, on the contrary, to give preference to inflationary investment leading to a drop in the standard of living. Organisation of control is required over the utilisation of resources in the country, the creation of production management bodies, determination of the scale of the public

sector and provision for its efficient operation, the elaboration of a policy with respect to private enterprise, and so on.

In solving such development problems use can often be made of the planning experience of the socialist countries, especially the USSR. It is obvious that the conditions under which planning in the socialist countries took shape differed from those obtaining today in the majority of developing countries, the fundamental difference lying in the socio-economic structure of social production, distribution and consumption, as well as the economic and social institutions resulting from this structure. In spite of such substantial differences, certain common problems of economic development and planning in the newly-free countries can be resolved using the experience of the socialist ones. These include the task of overcoming or closing the gap in development levels between the newly-free countries and those with developed economies. This task can be resolved by an acceleration of growth, a substantial increase in the scale of accumulation, rapid industrialisation and, consequently, deep structural changes in the economy.

Analysis of the content, methods of programming and the instruments for realising the economic development programmes of the capitalist countries clearly shows that attempts to apply state regulation to heal the ills of capitalism are fruitless. The "planning" activities of the bourgeois states, having speeded up development, eventually led to a further intensification of the contradictions both within the country and within the framework of the capitalist system on the international level. Competition between the international monopolies has led to a form of struggle that cancels out all attempts by bourgeois governments to "plan" development. In accordance with the laws of capitalism, the working population pay for collapse of the programme for the "flourishing of the welfare society". Fifteen million unemployed, wage cuts, and price rises are what the working people have to pay for the "free society". All this confirms the illusory nature of reformists' hopes that planning might rid all members of capitalist society of the growing feeling of despair as the economy drifts from crisis to crisis. Crises only confirm that the instability of capitalism's development is an in-

<sup>1</sup> *Documents and Resolutions. XXVth Congress of the CPSU*, p. 15.



tegral part of it and that no efforts by the bourgeois state can abolish the laws governing the capitalist mode of production.

Only the socialist world can provide an answer to the fundamental questions of social development, only socialism demonstrates the efficient use of economic planning in the interests of all the people.

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